



Continuity and Diversity of Courses

The Secondary / Post-Secondary Interface

Project III: Nature of Programs

Alan J.C. King
Principal Investigator

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Vol 2

This research project
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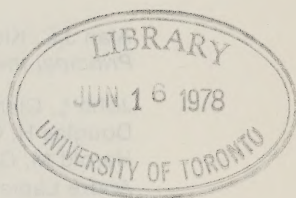
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INTRODUCTION

This is the second volume of a research report concerned with the relationship between courses offered in the latter years of secondary school and the first years of colleges of applied arts and technology and universities. It is part of a larger study of the characteristics of the secondary-post secondary interface.¹ The research focusses primarily on a description of variability in topic coverage across particular courses at each level and the implications of the variability for both students and teachers.

In this volume we include tables which summarize the responses to questionnaires sent to teachers and instructors in the final years of secondary school and first years of college and university at a sample of institutions from across the province. We also include enrolment and student achievement information, copies of the data-gathering instruments, and a detailed explanation of the procedures used to estimate the validity of the ratings given by the respondents to the questionnaires. This material should be of interest to those seeking to examine a subject area in greater detail. The volume is divided into four sections.

1. TABLES PERTAINING TO QUESTIONNAIRE DATA

The tables in this section are presented according to subject; each subject contains subdivisions relating to the institutional level from which information was gathered. Frequency distributions and percentages form the main mode of data presentation. This format was supplemented by means and standard deviations when these computations were thought to be relevant. For the section of the questionnaires dealing with the teacher ratings of student competence on specific objectives, means and standard deviations only have been presented.

¹"interface n: a surface forming a common boundary of two bodies, spaces, or phases." Webster's Dictionary. The term is used in this study to denote the interrelationships and common characteristics of courses at two institutional levels.

2. FACTUAL DATA

In order to supplement the perceptual material from questionnaires, factual information was also collected. Whenever possible, the information is provided for a ten-year span so that trends may be detected. The tables include:

- (a) enrolment figures and student mark distributions for years 3, 4, and 5 secondary school courses from Ministry of Education records

- (b) enrolment figures for program areas at universities and colleges from Ministry of Colleges and Universities records and Statistics Canada

- (c) enrolment figures and mark distributions for first year courses at selected universities from university registrars.

3. THE DATA-GATHERING INSTRUMENTS

(a) Questionnaires

Questionnaires were developed in order to allow teachers to fully describe their courses. Section I deals with the background of instructors; it is altered where necessary to make it appropriate to secondary school teachers college and university instructors. Section II contains items common to all courses (example: preparation of students, weighting of final mark). Section III, IV, and V are subject-specific and include items dealing with general aims, specific content or objectives of the subject and amount of time allocated to general topic areas.

(b) Interviews

In order to provide a longitudinal perspective to the study, interviews with department chairmen and registrars at colleges and universities, and department heads at secondary schools were conducted to collect information on trends over time. The questions which were asked are presented here. In the interview forms for the registrars, it will be noted that requests for information (cited above in factual information) were also made.

4. RATING VALIDATION PROCEDURE

An important part of the interface analysis involved the assumption that respondents at both levels would interpret a given rating scale similarly.

It was thus necessary to determine the degree of consistency with which respondents were employing the rating scales. Rating validation instruments were developed for this purpose. The rating validation instruments are presented in this section and the instructors' responses to them analyzed and interpreted.

A. QUESTIONNAIRE DATA TABLES

TABLE 1.1
SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	TOTAL
Secondary school teaching	0	2	2	2	3	1	7	2	4	3	4	1	2	2	2	0	1	3	1	2	5	49
Teaching this course (or its equivalent)	0	9	6	5	6	7	5	1	4	1	2	0	3	0	0	0	0	0	0	0	0	49
Related professional (non-teaching) Experience	42	0	3	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	49

TABLE 1.2
SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 4 GENERAL	
	N	%
No	29	61
Elementary	11	23
Community college	2	4
University	5	10
Other	1	2
More than one other	0	0
Total	48	100

TABLE 1.3
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+ TOTAL	
Secondary school teaching	0	3	3	6	4	3	4	4	2	5	2	1	3	0	2	1	1	1	1	1	4	51
Teaching this course (or its equivalent)	0	11	10	5	5	4	4	0	4	1	3	0	1	0	0	0	1	0	0	1	1	51
Related professional (non-teaching) Experience	38	5	4	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	51

TABLE 1.4
SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 4 ADVANCED	
	N	%
No	29	58
Elementary	4	8
Community college	0	0
University	9	18
Other	6	12
More than one other	2	4
Total	50	100

TABLE 1.5
SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' PROFESSIONAL EXPERIENCE

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	TOTAL
Secondary school teaching	1	0	1	0	2	5	1	3	5	1	2	7	1	7	2	2	2	1	0	1	7	51
Teaching this course (or its equivalent)	1	8	4	4	3	4	7	3	6	0	4	1	1	1	2	0	0	1	1	0	0	51
Related professional (non-teaching) Experience	40	2	4	0	0	1	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	51

TABLE 1.6
SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 5	
	N	%
No	32	64
Elementary	11	22
Community college	1	2
University	5	10
Other	1	2
More than one	0	0
Total	50	100

TABLE 1.7
SECONDARY SCHOOL ENGLISH
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Doctorate	0	0	0	0	0	0
Master's	10	20	18	35	14	28
Honour Bachelor's (4 year)	16	33	22	43	30	60
Bachelor's	23	47	10	20	6	12
Post-Secondary Diploma	0	0	0	0	0	0
Other	0	0	1	2	0	0
Total	49	100	51	100	50	100

TABLE 1.8
SECONDARY SCHOOL ENGLISH
OSSTF/AEFO CERTIFICATION CATEGORY

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Category 1/A1	3	6	1	2	3	6
Category 2/A2	13	27	5	10	2	4
Category 3/A3	6	12	6	12	3	6
Category 4/A4	27	55	39	76	42	84
Total	49	100	51	100	50	100

TABLE 1.9
SECONDARY SCHOOL ENGLISH
TEACHERS' POSITION IN SCHOOL

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Principal	0	0	0	0	0	0
Vice-principal	0	0	0	0	0	0
Department head	7	14	6	12	16	32
Assistant or associate head	7	14	9	18	12	24
Teacher	34	70	36	70	22	44
Other	1	2	0	0	0	0
Total	49	100	51	100	50	100

TABLE 1.10
SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Yes, it is my area	36	76	47	92	40	82
Yes, it is closely related	5	11	4	8	6	12
No	6	13	0	0	3	6
Total	47	100	51	100	49	100

TABLE 1.11

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great		Moderate		Small		Not At		TOTAL
	Extent	N	Extent	N	Extent	N	All	%	
Interests of students	22	45	24	49	2	4	1	2	49
Knowledge of subject of incoming students	20	42	19	40	5	10	4	8	48
Relationship between this course and others taken concurrently	9	19	12	25	8	17	19	39	48
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	8	16	12	25	17	34	12	25	49
Ontario Ministry of Education guidelines	6	12	17	35	11	22	15	31	49
Course outline assigned to you	17	39	14	33	4	9	8	19	43
Special interests or training you might have	18	37	18	37	11	22	2	4	49
Content and approach of principal text(s)	15	33	11	24	14	30	6	13	46
Staffing	3	7	6	15	3	7	29	71	41
Other	2	5	-	-	-	-	41	95	43

TABLE 1.12
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	11	22	30	60	5	10	4	8	50
Knowledge of subject of incoming students	17	33	18	35	10	20	6	12	51
Relationship between this course and others taken concurrently	7	14	12	24	17	34	14	28	50
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	14	28	12	24	11	22	13	26	50
Ontario Ministry of Education guidelines	4	7	13	26	13	26	21	41	51
Course outline assigned to you	21	46	10	22	7	16	7	16	45
Special interests or training you might have	19	37	23	45	6	12	3	6	51
Content and approach of principal text (s)	16	35	12	27	9	19	9	19	46
Staffing	2	5	2	5	7	19	27	71	38
Other	3	7	1	3	1	3	3	36	41

TABLE 1.13

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interest of students	14	27	28	55	7	14	2	4	51
Knowledge of subject of incoming students	23	45	20	39	4	8	4	8	51
Relationship between this course and others taken concurrently	7	14	11	23	11	23	20	40	49
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	11	24	17	36	9	19	10	21	47
Ontario Ministry of Education guidelines	7	14	18	36	11	22	14	28	50
Course outline assigned to you	21	48	7	16	3	7	13	29	44
Special interests or training you might have	25	51	21	43	2	4	1	2	49
Content and approach of principal text(s)	19	38	12	24	13	26	6	12	50
Staffing	3	7	3	7	5	12	31	74	42
Other	6	13	3	6	-	-	38	81	47

TABLE 1.14

SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Yes	29	59	43	84	43	84
No	20	41	8	16	8	16
Total	49	100	51	100	51	100

TABLE 1.15

SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Excellent	1	2	1	2	1	2
Good	12	27	23	46	27	55
Fair	27	60	21	42	21	43
Poor	5	11	5	10	-	-
Total	45	100	50	100	49	100

TABLE 1.16

SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
A great deal	40	82	33	65	29	58
A moderate amount	7	14	15	29	20	40
Very little	2	4	2	4	1	2
Do not know	-	-	1	2	-	-
Total	49	100	51	100	50	100

TABLE 1.17

SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Great extent	1	2	2	4	-	-
Moderate extent	4	8	1	2	2	4
Small extent	19	39	15	29	10	20
Not at all	25	51	33	65	39	76
Total	49	100	51	100	51	100

TABLE 1.18

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	17	35	27	55	4	8	1	2	-	-	-	-	-	-	-	-	49	5.9	6.3
Socratic (question and answer technique, interaction between students and instructor)	2	4	-	-	12	25	9	18	9	18	8	16	7	15	2	4	49	36.9	19.2
Small group activities (with the instructor supervising a number of small groups)	13	27	25	51	7	14	4	8	-	-	-	-	-	-	-	-	49	9.3	8.2
Seminar, tutorial (with or without additional instructors; this technique may include student presentations)	28	57	19	39	2	4	-	-	-	-	-	-	-	-	-	-	49	3.3	4.9
Student presentations (exclusive of seminars, tutorials)	17	35	27	55	5	10	-	-	-	-	-	-	-	-	-	-	49	5.7	5.5
Testing	2	4	41	84	6	12	-	-	-	-	-	-	-	-	-	-	49	8.4	5.0
Audiovisual (television, tapes, films, etc.)	14	29	30	61	4	8	-	-	-	-	-	-	1	2	-	-	49	6.4	9.1
Field trips, visits by resource personnel	38	78	11	22	-	-	-	-	-	-	-	-	-	-	-	-	49	.6	1.3
Dramatic presentations (plays, excerpts from plays, role-playing, etc.)	21	43	25	51	3	6	-	-	-	-	-	-	-	-	-	-	49	4.4	5.4
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	3	6	26	53	13	27	4	8	-	-	2	4	-	-	1	2	49	14.7	14.6
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	39	80	10	20	-	-	-	-	-	-	-	-	-	-	-	-	49	1.2	2.6
Other	46	94	2	4	-	-	-	-	1	2	-	-	-	-	-	-	49	1.0	5.1

TABLE 1.19
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10		11-20		21-30		31-40		41-50		51-75		76+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	5	9	27	53	10	20	8	16	1	2	-	-	-	-	-	-	51	11.4	9.3
Socratic (question and answer technique, interaction between students and instructor)	-	-	1	2	10	20	10	20	10	20	10	20	8	15	2	3	51	38.6	17.4
Small group activities (with the instructor supervising a number of small groups)	8	15	33	65	7	14	2	4	1	2	-	-	-	-	-	-	51	8.5	8.0
Seminar, tutorial (with or without additional instructors' this technique may include student presentations)	13	26	31	61	6	12	1	2	-	-	-	-	-	-	-	-	51	6.9	6.1
Student presentations (exclusive of seminars, tutorials)	18	35	29	57	4	8	-	-	-	-	-	-	-	-	-	-	51	4.8	4.9
Testing	1	2	39	76	10	20	1	2	-	-	-	-	-	-	-	-	51	9.4	5.1
Audiovisual (television, tapes, films, etc.)	6	12	44	86	1	2	-	-	-	-	-	-	-	-	-	-	51	4.6	2.9
Field trips, visits by resource personnel	35	69	16	31	-	-	-	-	-	-	-	-	-	-	-	-	51	.9	1.9
Dramatic presentations (plays, excerpts from plays, role-playing, etc.)	17	33	32	63	2	4	-	-	-	-	-	-	-	-	-	-	51	3.6	4.0
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	5	10	34	67	11	21	1	2	-	-	-	-	-	-	-	-	51	8.9	6.7
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	35	69	15	29	1	2	-	-	-	-	-	-	-	-	-	-	51	2.0	3.3
Other	49	96	2	4	-	-	-	-	-	-	-	-	-	-	-	-	51	.3	1.4

TABLE 1.20

SECONDARY SCHOOL ENGLISH YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
 EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	5	10	25	49	15	29	3	6	2	4	1	2	-	-	-	-	51	12.4	10.2
Socratic (question and answer technique, interaction between students and instructor)	1	2	2	4	7	14	12	23	10	20	5	10	13	25	1	2	51	39.1	18.9
Small group activities (with the instructor supervising a number of small groups)	11	22	25	49	12	23	3	6	-	-	-	-	-	-	-	-	51	9.2	7.7
Seminar, tutorial (with or without additional instructors; this technique may include student presentations)	17	33	23	45	7	14	2	4	1	2	1	2	-	-	-	-	51	8.9	10.5
Student presentations (exclusive of seminars, tutorials)	23	45	23	45	5	10	-	-	-	-	-	-	-	-	-	-	51	4.7	5.3
Testing	2	4	36	71	13	25	-	-	-	-	-	-	-	-	-	-	51	9.0	4.9
Audiovisual (television, tapes, films, etc.)	12	23	35	69	4	8	-	-	-	-	-	-	-	-	-	-	51	4.7	4.2
Field trips, visits by resource personnel	32	63	19	38	-	-	-	-	-	-	-	-	-	-	-	-	51	1.3	2.2
Dramatic presentations (plays, excerpts from plays, role-playing, etc.)	21	41	29	57	1	2	-	-	-	-	-	-	-	-	-	-	51	3.0	3.3
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	14	27	28	55	9	18	-	-	-	-	-	-	-	-	-	-	51	6.1	5.8
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	43	84	8	16	-	-	-	-	-	-	-	-	-	-	-	-	51	1.0	2.6
Other	44	86	7	14	-	-	-	-	-	-	-	-	-	-	-	-	51	.9	2.7

TABLE 1.21
SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	14	42	10	29	-	-	10	29	34
Main text plus supplementary text(s)	7	18	9	24	6	16	16	42	38
Two or more main texts or materials from other texts	31	68	2	4	5	11	8	17	46
Reference books, dictionaries, encyclopedias, etc.	2	4	23	47	21	43	3	6	49
Documents, journals and scholarly reviews	-	-	4	8	13	27	31	65	48
Individualized learning packages	-	-	1	2	8	17	38	81	47
Other classroom resources (magazines, information kits, newspapers, etc.)	2	4	14	29	21	43	12	24	49
Audiovisual media (television, tapes, film strips, etc.)	1	2	20	41	20	41	8	16	49
Mimeographed materials (lecture notes, etc.)	4	8	17	35	20	42	7	15	48
Other	3	7	1	2	2	4	40	87	46

TABLE 1.22
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	21	57	2	5	4	11	10	27	37
Main text plus supplementary text(s)	6	16	15	39	6	16	11	29	38
Two or more main texts or materials from other texts	33	72	5	11	7	15	1	2	46
Reference books, dictionaries, encyclopedias, etc.	6	12	24	48	20	40	-	-	50
Documents, journals and scholarly reviews	2	4	5	10	24	48	19	38	50
Individualized learning packages	1	2	2	4	5	11	40	83	48
Other classroom resources (magazines, information kits, newspapers, etc.)	-	-	11	22	16	32	23	46	50
Audiovisual media (television, tapes, film strips, etc.)	-	-	11	22	30	60	9	18	50
Mimeographed materials (lecture notes, etc.)	9	18	20	40	15	30	6	12	50
Other	2	4	1	2	1	2	44	92	48

TABLE 1.23
SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	21	55	3	8	3	8	11	29	38
Main text plus supplementary text(s)	4	10	17	42	8	20	11	28	40
Two or more main texts or materials from other texts	35	70	9	18	3	6	3	6	50
Reference books, dictionaries, encyclopedias, etc.	12	23	25	49	13	26	1	2	51
Documents, journals and scholarly reviews	4	8	20	39	20	39	7	14	51
Other classroom resources (magazines, information kits, newspapers, etc.)	-	-	7	15	28	60	12	25	47
Audiovisual media (television, tapes, film strips, etc.)	2	4	11	22	27	54	10	20	50
Mimeographed materials (lecture notes, etc.)	13	26	17	33	14	27	7	14	51
Other	3	6	2	4	-	-	44	90	49

TABLE 1.24
SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
0%*	1	2	-	-	1	2
1-25%	9	18	1	2	1	2
26-50%	22	45	19	37	10	20
51-75%	4	8	6	12	5	10
76-100%	9	18	15	29	14	27
101-150%	1	2	4	8	11	21
151-200%	3	6	4	8	8	16
201%+	-	-	2	4	1	2
Total	49	100	51	100	51	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 1.25
SECONDARY SCHOOL ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Yes	35	72	34	67	30	60
No	7	14	12	23	12	24
Not applicable	7	14	5	10	8	16
Total	49	100	51	100	50	100

TABLE 1.26
SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	-	-	1	14	2	29	1	14	3	43	-	-	-	-	7	36.9	12.6
Mid-term examination	16	32	2	4	10	21	10	21	5	10	5	10	-	-	1	2	49	19.2	19.8
Other written tests	3	6	5	10	15	31	14	29	7	14	2	4	3	6	-	-	49	24.8	14.4
Other oral tests	39	80	10	20	-	-	-	-	-	-	-	-	-	-	-	-	49	1.2	2.6
Individual papers (essays, reports, book reports, etc.)	2	4	9	19	10	20	13	27	8	16	5	10	2	4	-	-	49	25.1	14.9
Group or team papers	35	71	12	25	1	2	1	2	-	-	-	-	-	-	-	-	49	2.6	5.1
Individual projects (exclusive of essays, reports)	37	76	11	22	-	-	1	2	-	-	-	-	-	-	-	-	49	2.2	4.7
Group or team projects	34	69	12	25	3	6	-	-	-	-	-	-	-	-	-	-	49	2.3	4.6
Class participation	16	33	27	55	5	10	1	2	-	-	-	-	-	-	-	-	49	5.4	5.2
Effort	28	57	21	43	-	-	-	-	-	-	-	-	-	-	-	-	49	2.7	3.5
Attendance	39	80	10	20	-	-	-	-	-	-	-	-	-	-	-	-	49	1.2	2.6
Individual oral pre- sentations (prepared or spontaneous speeches)	35	71	13	27	1	2	-	-	-	-	-	-	-	-	-	-	49	2.1	3.7
Group dramatic presentations	43	88	5	10	1	2	-	-	-	-	-	-	-	-	-	-	49	1.0	2.9
Other	46	94	1	2	-	-	-	-	-	-	1	2	-	-	1	2	49	2.8	13.1

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 1.27

SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	-	-	3	25	6	50	2	17	1	8	-	-	-	-	12	30.0	8.9
Mid-term examination	17	33	3	6	13	25	4	8	10	20	4	8	-	-	-	-	51	18.1	16.0
Other written tests	3	6	7	14	22	43	14	28	2	4	2	4	1	2	-	-	51	20.6	12.0
Other oral tests	38	75	12	23	1	2	-	-	-	-	-	-	-	-	-	-	51	1.8	3.5
Individual papers (essays, reports, book reports, etc.)	3	6	3	6	18	35	12	23	10	20	4	8	1	2	-	-	51	24.7	12.8
Group or team papers	38	75	13	25	-	-	-	-	-	-	-	-	-	-	-	-	51	1.4	2.6
Individual projects (exclusive of essays, reports)	34	67	11	22	5	9	-	-	1	2	-	-	-	-	-	-	51	3.1	6.4
Group or team projects	26	51	22	43	3	6	-	-	-	-	-	-	-	-	-	-	51	3.2	4.1
Class participation	16	31	31	61	4	8	-	-	-	-	-	-	-	-	-	-	51	5.1	4.4
Effort	31	61	17	33	3	6	-	-	-	-	-	-	-	-	-	-	51	2.5	4.0
Attendance	43	84	8	16	-	-	-	-	-	-	-	-	-	-	-	-	51	.8	1.9
Individual oral pre- sentations (prepared or spontaneous speeches)	28	55	21	41	1	2	1	2	-	-	-	-	-	-	-	-	51	3.1	4.6
Group dramatic presentations	39	76	11	22	1	2	-	-	-	-	-	-	-	-	-	-	51	1.5	3.4
Other	47	92	3	6	-	-	-	-	1	2	-	-	-	-	-	-	51	1.0	4.8

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 1.28
SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	-	-	3	25	6	50	2	17	1	8	-	-	-	-	12	29.6	9.5
Mid-term examination	18	34	1	2	10	20	6	12	10	20	6	12	-	-	-	-	51	19.6	17.5
Other written tests	4	8	9	18	15	29	13	25	7	14	2	4	1	2	-	-	51	21.7	13.6
Other oral tests	43	84	7	14	1	2	-	-	-	-	-	-	-	-	-	-	51	.8	2.2
Individual papers (essays, reports, book reports, etc.)	2	4	2	4	12	23	16	31	14	28	3	6	2	4	-	-	51	28.2	13.2
Group or team papers	42	82	7	14	2	4	-	-	-	-	-	-	-	-	-	-	51	1.6	4.0
Individual projects (exclusive of essays, reports)	34	67	12	23	4	8	1	2	-	-	-	-	-	-	-	-	51	3.3	5.9
Group or team projects	32	63	14	27	5	10	-	-	-	-	-	-	-	-	-	-	51	2.9	4.6
Class participation	16	31	31	61	4	8	-	-	-	-	-	-	-	-	-	-	51	4.4	4.1
Effort	30	59	19	37	2	4	-	-	-	-	-	-	-	-	-	-	51	2.1	3.3
Attendance	41	80	10	20	-	-	-	-	-	-	-	-	-	-	-	-	51	.6	1.4
Individual oral pre- sentations (prepared or spontaneous speeches)	31	61	17	33	2	4	1	2	-	-	-	-	-	-	-	-	51	2.8	4.6
Group dramatic presentations	43	84	8	16	-	-	-	-	-	-	-	-	-	-	-	-	51	.7	1.6
Notebooks	44	88	2	4	2	4	-	-	-	-	2	4	-	-	-	-	50	.5	1.8
Other	48	94	2	4	-	-	-	-	-	-	-	-	1	2	-	-	51	1.4	8.4

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 1.29

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Explore the universal elements in human experience through the study of literature	32	65	13	27	2	4	2	4	49	2.5	.8
Develop student's ability to listen effectively	11	22	27	55	9	19	2	4	49	2.0	.8
Develop sense of self-worth and confidence	17	35	22	45	6	12	4	8	49	2.1	.9
Cultivate student's discrimination in reading	21	43	16	33	10	20	2	4	49	2.1	.9
Develop respect and tolerance for diverse opinions and ideas; encourage a broader perspective	37	75	12	25	-	-	-	-	49	2.8	.4
Promote fluent and grammatically acceptable spoken English	21	43	16	33	11	22	1	2	49	2.2	.8
Develop appreciation of the historical development of English literature	-	-	4	8	16	33	29	59	49	.5	.6
Develop student's ability to organize and integrate ideas and materials	28	57	18	37	3	6	-	-	49	2.5	.6
Develop an attitude of enquiry	15	31	23	47	7	14	4	8	49	2.0	.9
Develop a discipline to initiate a piece of work and complete it in a given time	19	39	20	41	7	14	3	6	49	2.1	.9
Promote fluent and grammatically acceptable <u>written</u> English	30	61	18	37	1	2	-	-	49	2.6	.5

TABLE 1.29 (Cont'd)
SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Improve student's understanding of the characteristics of the language	3	6	18	37	20	41	8	16	49	1.3	.8
Improve student's reading ability	19	39	17	35	11	22	2	4	49	2.1	.9
Develop student's desire to read	27	55	15	31	5	10	2	4	49	2.4	.8
Develop awareness of the literary and cultural heritage of the English language	1	2	9	18	19	39	20	41	49	.8	.8
Enrich the student's spoken and written vocabulary	15	31	26	53	7	14	1	2	49	2.1	.7
Develop student's creative potential	6	12	22	45	12	25	9	18	49	1.5	.9
Develop an appreciation of literature	19	39	20	41	5	10	5	10	49	2.1	.9
Develop an appreciation of media other than literature (e.g. film, television, etc.)	6	12	13	27	17	34	13	27	49	1.2	1.0
Develop student's ability to think critically	25	51	20	41	3	6	1	2	49	2.4	.7
Other	3	7	1	2	-	-	41	91	49	.2	.8

TABLE 1.30

SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Explore the universal elements in human experience through the study of literature	34	67	10	19	5	10	2	4	51	2.5	.8
Develop student's ability to listen effectively	9	18	26	51	12	23	4	8	51	1.8	.8
Develop sense of self-worth and confidence	11	22	25	50	11	22	3	6	50	1.9	.8
Cultivate student's discrimina- tion in reading	21	41	24	47	5	10	1	2	51	2.3	.7
Develop respect and tolerance for diverse opinions and ideas; encourage a broader perspective	30	59	17	33	3	6	1	2	51	2.5	.7
Promote fluent and grammatically acceptable <u>spoken</u> English	14	27	31	61	5	10	1	2	51	2.1	.7
Develop appreciation of the historical development of English literature	5	10	18	37	18	37	8	16	49	1.4	.9
Develop student's ability to organize and integrate ideas and materials	48	94	3	6	-	-	-	-	51	2.9	.2
Develop an attitude of enquiry	22	43	24	47	2	4	3	6	51	2.3	.8
Develop discipline to initiate a piece of work and complete it in a given time	18	35	27	53	5	10	1	2	51	2.2	.7
Promote fluent and grammatically acceptable <u>written</u> English	48	94	3	6	-	-	-	-	51	2.9	.2

TABLE 1.30 (Cont'd)
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Improve student's understanding of the characteristics of the language	17	33	17	33	14	28	3	6	51	1.9	.9
Improve student's reading ability	15	29	22	43	12	24	2	4	51	2.0	.8
Develop student's desire to read	18	35	27	53	3	6	3	6	51	2.2	.8
Develop awareness of the literary and cultural heritage of the English language	11	22	22	43	13	25	5	10	51	1.8	.9
Enrich the student's spoken and written vocabulary	21	41	27	53	3	6	-	-	51	2.4	.6
Develop student's creative potential	8	16	26	52	13	26	3	6	50	1.8	.8
Develop an appreciation of literature	35	69	16	31	-	-	-	-	51	2.7	.5
Develop an appreciation of media other than literature (e.g. film, television, etc.)	4	8	14	28	18	36	14	28	50	1.2	.9
Develop student's ability to think critically	38	75	12	23	-	-	1	2	51	2.7	.6
Other	6	13	-	-	-	-	41	87	47	.4	1.0

TABLE 1.31

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Explore the universal elements in human experience through the study of literature	41	80	9	18	1	2	-	-	51	2.8	.5
Develop student's ability to listen effectively	11	22	23	46	12	24	4	8	50	1.8	.9
Develop sense of self-worth and confidence	10	20	24	49	13	27	2	4	49	1.9	.8
Cultivate student's discrimination in reading	28	55	19	37	4	8	-	-	51	2.5	.6
Develop respect and tolerance for diverse opinions and ideas; encourage a broader perspective	32	63	17	33	2	4	-	-	51	2.6	.6
Promote fluent and grammatically acceptable <u>spoken</u> English	21	41	24	47	5	10	1	2	51	2.3	.7
Develop appreciation of the historical development of English literature	10	20	20	40	18	36	2	4	50	1.8	.8
Develop student's ability to organize and integrate ideas and materials	42	82	8	16	1	2	-	-	51	2.8	.4
Develop an attitude of enquiry	26	51	21	41	4	8	-	-	51	2.4	.6
Develop a discipline to initiate a piece of work and complete it in a given time	23	45	23	45	5	10	-	-	51	2.4	.7
Promote fluent and grammatically acceptable <u>written</u> English	45	88	-	-	5	10	1	2	51	2.8	.5

TABLE 1.31 (Cont'd)
 SECONDARY SCHOOL ENGLISH YEAR 5
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Improve student's understanding of the characteristics of the language	14	27	23	45	13	26	1	2	51	2.0	.8
Improve student's reading ability	15	29	19	37	12	24	5	10	51	1.9	1.0
Develop student's desire to read	21	41	23	45	5	10	2	4	51	2.2	.8
Develop awareness of the literary and cultural heritage of the English language	17	33	23	45	10	20	1	2	51	2.1	.8
Enrich the student's spoken and written vocabulary	26	51	21	41	4	8	-	-	51	2.4	.6
Develop student's creative potential	8	16	26	52	14	28	2	4	50	1.8	.7
Develop an appreciation of literature	36	71	12	23	3	6	-	-	51	2.6	.6
Develop an appreciation of media other than literature (e.g. film, television, etc.)	1	2	12	26	24	52	9	20	46	1.1	.7
Develop student's ability to think critically	43	84	8	16	-	-	-	-	51	2.8	.4
Other	2	4	1	2	-	-	44	94	47	.2	.7

TABLE 1.32

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-10%		11-20%		21-40%		41-50%		51-60%		61-70%		71-80%		81-100%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Literature	2	4	-	-	1	2	20	41	11	22	5	10	5	10	3	6	2	5	49	45.7	19.9
Media other than literature																					
.critical assessment	22	45	19	39	7	14	-	-	-	-	-	-	-	-	-	-	1	2	49	7.3	13.6
.media production	38	78	9	18	2	4	-	-	-	-	-	-	-	-	-	-	-	-	49	2.0	4.4
Language skills																					
.reading	6	12	21	43	13	27	6	12	2	4	-	-	1	2	-	-	-	-	49	14.9	13.0
.writing	2	4	6	12	20	41	20	41	1	2	-	-	-	-	-	-	-	-	49	21.8	9.8
.speaking	9	18	27	56	11	22	2	4	-	-	-	-	-	-	-	-	-	-	49	9.4	7.9

TABLE 1.33

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N		%	
A variety of approaches (more than 2)	20	46		
By form and style	1	2		
By genre	5	12		
By ideas and concepts	8	19		
By modes (e.g., comedy, tragedy, satire)	-	-		
Thematic (e.g., women in literature)	8	19		
By culture or country	1	2		
Historical	-	-		
Other	-	-		
Total	43	100		

TABLE 1.34
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-10%		11-20%		21-40%		41-50%		51-60%		61-70%		71-80%		81-100%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Literature	2	4	-	-	-	-	12	23	9	18	10	19	11	23	5	9	2	4	51	53.5	17.7
Media other than literature	28	55	22	43	1	2	-	-	-	-	-	-	-	-	-	-	-	-	51	3.0	3.8
.critical assessment	42	82	9	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	.8	1.8
.media production																					
Language skills	12	23	28	55	8	16	3	6	-	-	-	-	-	-	-	-	-	-	51	8.4	7.7
.reading	2	4	3	6	20	39	25	49	1	2	-	-	-	-	-	-	-	-	51	23.9	10.2
.writing	6	12	41	80	4	8	-	-	-	-	-	-	-	-	-	-	-	-	51	6.9	4.3
.speaking																					

TABLE 1.35
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N		%	
A variety of approaches (more than 2)	24	50		
By form and style	3	6		
By genre	8	17		
By ideas and concepts	3	6		
By modes (e.g., comedy, tragedy, satire)	1	2		
Thematic (e.g., women in literature)	4	9		
By culture or country	2	4		
Historical	3	6		
Other	-	-		
Total	48	100		

TABLE 1.36

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-10%		11-20%		21-40%		41-50%		51-60%		61-70%		71-80%		81-100%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Literature	-	-	1	2	-	-	4	8	2	4	16	30	11	21	13	27	4	8	51	65.1	15.4
Media other than literature																					
.critical assessment	30	59	16	31	5	10	-	-	-	-	-	-	-	-	-	-	-	-	51	3.7	5.1
.media production	45	88	6	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	.5	1.4
Language skills (reading, writing, speaking)	-	-	2	4	11	21	34	67	3	6	1	2	-	-	-	-	-	-	51	29.6	11.3

TABLE 1.37

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N		%	
A variety of approaches (more than 2)	22	44		
By form and style	3	6		
By genre	9	18		
By ideas and concepts	10	20		
By modes (e.g., comedy, tragedy, satire)	-	-		
Thematic (e.g., women in literature)	5	10		
By culture or country	-	-		
Historical	1	2		
Other	-	-		
Total	50	100		

TABLE 1.38

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH GENRE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Essays	21	43	17	35	9	18	2	4	-	-	-	-	49	7.1	7.9
Novels	2	4	-	-	4	8	21	43	9	18	13	27	49	42.0	17.2
Plays	6	12	9	19	15	31	14	28	4	8	1	2	49	21.3	14.5
Poems	9	18	28	58	10	20	2	4	-	-	-	-	49	9.1	7.0
Short stories	3	6	20	41	19	39	6	12	1	2	-	-	49	14.6	8.9
Other	42	86	4	8	3	6	-	-	-	-	-	-	49	1.8	5.1

TABLE 1.39

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO PRE-TWENTIETH CENTURY
AND TWENTIETH CENTURY LITERATURE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Pre-twentieth century	18	37	12	25	5	10	11	22	2	4	1	2	49	14.3	15.9
Twentieth century	1	2	-	-	-	-	1	2	2	4	45	92	49	75.0	19.7

TABLE 1.40

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH ORIGIN"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Canadian	4	8	12	25	12	25	14	28	4	8	3	6	49	23.8	17.9
American	3	6	5	10	4	8	17	35	7	14	13	27	49	42.7	25.3
British	9	19	8	17	7	14	16	32	5	10	4	8	49	26.7	21.2
Other															
.English speaking	43	88	3	6	2	4	-	-	-	-	1	2	49	2.4	8.5
.Literature in translation	45	92	3	6	1	2	-	-	-	-	-	-	49	0.8	3.1

TABLE 1.41

29

SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH GENRE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Essays	5	10	35	68	9	18	2	4	-	-	-	-	51	9.2	6.3
Novels	-	-	1	2	6	12	33	65	10	19	1	2	51	34.3	11.6
Plays	1	2	6	12	7	14	35	68	1	2	1	2	51	26.8	10.5
Poems	3	6	19	37	16	31	12	24	1	2	-	-	51	16.0	9.8
Short stories	8	16	22	43	18	35	2	4	1	2	-	-	51	11.6	8.3
Other	44	86	5	10	1	2	1	2	-	-	-	-	51	1.7	5.3

TABLE 1.42

SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO PRE-TWENTIETH CENTURY
AND TWENTIETH CENTURY LITERATURE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Pre-twentieth century	2	4	4	8	8	16	23	45	3	6	11	21	51	36.3	21.3
Twentieth century	1	2	1	2	2	4	6	12	4	8	37	72	51	60.9	22.0

TABLE 1.43

SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH ORIGIN"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Canadian	11	22	14	27	13	25	8	16	1	2	4	8	51	15.6	16.0
American	7	13	6	12	6	12	24	47	3	6	5	10	51	27.4	18.9
British	3	6	-	-	3	6	17	33	5	10	23	45	51	48.7	24.3
Other															
.English speaking	46	90	4	8	-	-	1	2	-	-	-	-	51	1.5	6.0
.Literature in translation	34	67	14	27	1	2	2	4	-	-	-	-	51	3.5	7.0

TABLE 1.44

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH GENRE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Essays	14	27	27	53	10	20	-	-	-	-	-	-	51	7.8	6.5
Novels	2	4	-	-	10	19	31	61	4	8	4	8	51	31.3	12.8
Plays	2	4	5	10	9	17	30	59	3	6	2	4	51	28.8	15.7
Poems	3	6	12	23	20	39	13	26	2	4	1	2	51	20.5	13.0
Short stories	12	23	19	37	20	40	-	-	-	-	-	-	51	10.1	7.2
Other	44	86	6	12	1	2	-	-	-	-	-	-	51	1.2	3.7

TABLE 1.45

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO PRE-TWENTIETH CENTURY
AND TWENTIETH CENTURY LITERATURE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Pre-twentieth century	3	6	-	-	11	21	19	38	6	12	12	23	51	40.2	22.7
Twentieth century	-	-	3	6	2	4	5	10	7	13	34	67	51	57.3	21.0

TABLE 1.46

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH ORIGIN"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Canadian	10	19	23	45	6	12	5	10	3	6	4	8	51	15.2	19.4
American	12	23	7	14	12	24	17	33	1	2	2	4	51	19.6	17.8
British	3	6	2	4	-	-	11	22	9	17	26	51	51	53.1	24.4
Other															
.English speaking	41	80	7	14	3	6	-	-	-	-	-	-	51	2.2	5.3
.Literature in translation	29	57	14	27	6	12	2	4	-	-	-	-	51	5.5	8.9

TABLE 1.47

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS ^b %
		MEAN ^a	ENTRY	EXIT	ENTRY	MEAN	EXIT	
Language								
Comprehend a variety of materials (essential meaning and significant details)	69	2.5	.9	3.5	1.0	3.9	5.2	1.2
Understand the subtler nuances of language (e.g., emotional connot- ation of words, imaginative effects of language use)	73	1.5	1.1	2.7	1.3	3.3	4.6	1.5
Distinguish between essential and non-essential information	80	2.1	.8	3.3	1.1	3.8	5.1	1.2
Support generalizations with appro- priate evidence	84	2.0	1.0	3.5	1.1	3.9	5.1	1.3
Apply inferential skills	78	1.5	.8	2.8	1.2	3.3	4.5	1.7
Analyze language in terms of:								
a) grammar	69	1.0	.7	2.0	1.1	3.1	4.0	2.0
b) linguistics (origin and characteristics)	39	.5	.7	1.1	1.2	2.1	3.0	2.2
Apply flexibility in the speed of reading appropriate to content and purpose	59	1.6	.9	2.5	1.0	3.2	4.4	1.3

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 7 indicating Mastery, Competence in High Level, Creative Situations. See English questionnaire for details

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 1.47 (Cont'd)

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Write an effective sentence	82	2.4	1.0	1.0	3.6	4.1	1.0	5.4	1.1	78
Write an effective paragraph	82	2.0	1.1	1.1	3.5	4.0	0.9	5.4	1.1	84
Demonstrate facility in writing in terms of planning, organization, presentation and editing:										
a) essays, (expository pose)	80	1.7	.8	.9	3.2	3.5	.9	5.0	1.1	73
b) creative writing (personal essays, descriptions, poems, short stories, etc.)	61	1.7	1.1	1.5	2.8	3.3	1.3	4.5	1.7	57
c) precis, summary and abstract	51	1.4	1.0	1.2	2.4	3.1	1.2	4.3	1.4	57
d) memos	20	1.4	1.6	1.9	2.2	3.1	1.6	4.1	2.2	22
e) letters	51	2.0	1.2	1.4	3.3	3.4	1.2	4.9	1.5	51
f) reports	63	1.8	1.1	1.3	3.3	3.4	1.3	4.9	1.7	57
g) editorials	39	1.5	1.0	1.5	2.8	2.7	1.5	4.1	2.0	31
In written work:										
Use language in a grammatically appropriate manner	71	2.2	.9	1.0	3.3	3.7	1.0	5.1	1.1	71
Use words with precision	76	1.8	.9	.9	3.0	3.5	1.0	4.9	1.2	73
Use words with subtlety	65	1.1	.8	1.1	2.1	2.9	1.2	4.3	1.5	82
Write in a style appropriate to content and audience	73	1.7	1.0	1.2	2.7	3.3	1.3	4.5	1.3	73

TABLE 1.47 (Cont'd)

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.			
Use language imaginatively in writing:										
a) poetry	39	1.2	.9	2.1	1.3	2.6	1.2	3.6	1.8	45
b) prose	55	1.7	.8	2.7	1.2	3.2	1.0	4.5	1.3	71
Present an argument effectively	80	1.8	.9	3.2	1.0	3.7	1.1	5.1	1.2	84
Use effective note-taking techniques	69	1.8	1.0	3.0	1.1	3.5	1.3	4.7	1.4	63
In oral work:										
Speak in a style appropriate to audience and subject matter	67	1.9	1.0	3.1	1.1	3.4	1.0	4.7	1.4	71
Use words with precision	76	1.6	.8	2.8	.9	3.4	1.1	4.7	1.2	80
Use words with subtlety	69	1.0	.7	2.0	1.0	2.9	1.3	4.2	1.5	78
Present an argument effectively	78	2.0	.9	3.3	1.0	3.7	1.1	4.9	1.2	78
Contribute effectively in a small group discussion	65	2.3	1.2	3.5	1.3	3.7	1.0	5.1	1.3	67
Participate in a dramatic performance	43	1.7	1.3	2.6	1.8	2.9	1.5	4.2	1.9	51
Use research techniques effectively:										
a) use library efficiently (indexes, reference materials)	55	1.7	1.0	2.7	1.3	3.3	1.0	4.4	1.3	69
b) use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography)	57	1.1	1.3	1.9	1.2	2.5	1.3	3.6	1.6	59

TABLE 1.47(Cont'd)

SECONDARY SCHOOL ENGLISH YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	
<u>Media</u>								
Critically assess film, television, magazines, newspapers, etc.	55	1.6	1.1	3.1	1.2	3.4	1.3	4.6 1.5 57
Present a mass media production	22	.9	1.1	2.0	1.9	2.0	1.5	3.0 2.1 20
<u>Literature</u>								
Analyze literature through an examination of its characteristics	76	1.8	1.0	3.2	1.2	3.2	1.1	4.6 1.3 65
Analyze literature in terms of the relationship of organization to meaning	71	1.5	.9	2.8	1.0	2.9	1.0	4.2 1.3 67
Identify literary genres by examination of its characteristics	53	1.5	.9	2.5	1.0	2.8	1.0	3.9 1.3 67
Write a literary critique	61	1.2	.9	2.4	1.1	3.1	1.1	4.3 1.5 69
Apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work	61	1.1	.8	2.1	1.0	3.0	1.1	4.2 1.4 69
Explain the relationship between the text and extrinsic materials (e.g., biographical, historical, mythological)	51	1.2	.8	2.2	1.2	2.6	1.3	3.6 1.8 49
Analyze literary forms in terms of:								
a) stylistic techniques (e.g., style, tone, form)	61	1.3	.7	2.4	1.0	2.9	1.1	4.1 1.4 67
b) connotation (e.g., word, image, sound)	65	1.5	.8	2.5	1.2	3.0	1.1	4.2 1.4 73
Evaluate written and oral critiques	59	1.2	.9	2.3	1.1	2.9	1.4	4.0 1.6 63

TABLE 1.48

SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		MEAN ^a	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Language										
Comprehend a variety of materials (essential meaning and significant details)	86	2.9	.9	4.2	1.0	4.1	1.2	5.6	1.1	80
Understand the subtler nuances of language (e.g., emotional connot- ation of words, imaginative effects of language use)	92	2.0	1.0	3.5	1.2	3.5	.9	5.1	.8	86
Distinguish between essential and non-essential information	84	2.5	1.1	3.9	1.2	3.9	1.0	5.5	1.1	78
Support generalizations with appro- priate evidence	96	2.4	1.1	4.3	1.2	4.0	1.1	5.7	1.1	84
Apply inferential skills	88	2.0	1.0	3.5	1.0	3.5	1.0	5.1	1.0	80
Analyze language in terms of:										
a) grammar	80	1.6	1.1	2.8	1.2	3.4	1.3	4.7	1.4	84
b) linguistics (origin and characteristics)	55	.6	.9	1.6	1.5	2.4	1.3	3.7	1.8	73
Apply flexibility in the speed of reading appropriate to content and purpose	67	2.0	1.2	3.3	1.3	3.8	1.0	5.2	1.1	73

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 7

indicating Mastery, Competence in High Level, Creative Situations. See English questionnaire for details

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 1.48 (Cont'd)
 SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	EXIT MEAN	S.D.	ENTRY MEAN	S.D.		
Write an effective sentence	90	2.8	1.2	4.2	1.2	4.5	1.2	5.9	1.1
Write an effective paragraph	90	2.5	1.1	4.1	1.2	4.2	1.3	5.8	1.0
Demonstrate facility in writing in terms of planning, organization, presentation and editing:									
a) essays, (expository prose)	96	2.3	1.2	4.0	1.2	4.0	1.1	5.6	1.0
b) creative writing (personal essays, descriptions, poems, short stories, etc.)	63	2.8	1.3	3.8	1.3	4.0	1.3	5.1	1.4
c) precis, summary and abstract	76	1.8	1.2	3.4	1.4	3.5	1.3	5.1	1.3
d) memos	14	1.5	1.8	1.9	1.9	2.5	1.9	3.2	2.3
e) letters	25	1.8	1.4	2.5	1.7	3.0	1.4	4.2	1.8
f) reports	59	2.1	1.1	3.5	1.5	3.5	1.3	4.9	1.3
g) editorials	43	1.4	1.2	2.6	1.5	2.9	1.4	4.0	1.9
In written work:									
Use language in a grammatically appropriate manner	92	2.5	1.0	3.8	1.0	4.1	1.1	5.5	1.1
Use words with precision	94	2.1	1.0	3.6	1.0	4.1	1.3	5.6	1.1
Use words with subtlety	88	1.7	1.1	3.0	1.2	3.6	1.3	5.0	1.2
Write in a style appropriate to content and audience	84	2.0	1.1	3.4	1.1	3.7	1.0	5.2	1.0

TABLE 1.48 (Cont'd)
SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Use language imaginatively in writing:										
a) poetry	59	2.1	1.4	3.1	1.5	3.4	1.2	4.5	1.5	57
b) prose	82	2.3	1.2	3.6	1.3	3.6	1.0	5.0	1.2	71
Present an argument effectively	94	2.2	1.0	3.7	1.1	3.8	1.1	5.4	1.0	88
Use effective note-taking techniques	75	2.2	1.3	3.4	1.4	3.6	1.0	5.0	1.4	67
In oral work:										
Speak in a style appropriate to audience and subject matter	80	2.3	1.1	3.5	1.1	3.7	1.0	5.1	1.0	80
Use words with precision	90	2.0	1.0	3.3	1.1	3.7	1.0	5.0	1.1	90
Use words with subtlety	86	1.7	1.1	2.9	1.2	3.3	1.1	4.6	1.1	82
Present an argument effectively	86	2.2	1.0	3.6	1.2	3.7	1.1	5.2	1.2	82
Contribute effectively in a small group discussion	65	2.6	1.3	3.7	1.4	3.9	1.0	5.1	1.1	75
Participate in a dramatic performance	41	1.9	1.2	2.9	1.6	3.0	1.4	4.2	1.9	43
Use research techniques effectively:										
a) use library efficiently (indexes, reference materials)	86	2.2	1.2	3.7	1.3	3.6	1.2	5.1	1.4	75
b) use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography)	88	1.8	1.3	3.6	1.4	3.4	1.4	5.3	1.5	76

TABLE 1.48 (Cont'd)

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SECONDARY SCHOOL ENGLISH YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
<u>Media</u>										
Critically assess film, television, magazines, newspapers, etc.	59	1.9	1.1	3.3	1.3	3.5	1.1	5.1	1.4	51
Present a mass media production	18	.9	1.2	1.6	1.6	2.4	1.6	3.5	2.4	31
<u>Literature</u>										
Analyze literature through an examination of its characteristics	94	2.3	1.2	3.8	1.3	3.5	1.0	5.3	1.3	78
Analyze literature in terms of the relationship of organization to meaning	90	1.8	1.2	3.3	1.3	3.1	1.2	4.8	1.3	78
Identify literary genres by examination of its characteristics	90	2.0	1.3	3.4	1.4	3.4	1.2	4.8	1.3	78
Write a literary critique	90	1.7	1.1	3.5	1.4	3.2	1.3	4.8	1.5	80
Apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work	96	1.7	1.0	3.2	1.2	3.1	.9	4.7	1.2	82
Explain the relationship between the text and extrinsic materials (e.g., biographical, historical, mythological)	90	1.6	1.2	3.0	1.3	3.0	1.1	4.6	1.3	76
Analyze literary forms in terms of										
a) stylistic techniques (e.g., style, tone, form)	96	1.8	1.2	3.4	1.3	3.2	1.2	4.8	1.3	84
b) connotation (e.g., word, image, sound)	92	1.9	1.2	3.4	1.4	3.3	1.1	4.9	1.4	82
Evaluate written and oral critiques	76	1.5	1.1	3.1	1.5	3.1	1.4	4.6	1.7	67

TABLE 1.49

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS ^b	
		MEAN ^a	S.D.	ENTRY	EXIT	MEAN	S.D.
Literature							
Analyze literature through an examination of its characteristics	96	2.7	.8	4.3	1.0	4.0	.9
Analyze literature in terms of the relationship of organization to meaning	92	2.2	1.0	3.9	1.1	3.5	.9
Identify literary genres by examination of its characteristics	86	2.8	1.3	4.3	1.4	3.9	1.2
Write a literary critique	100	2.0	1.2	3.9	1.2	3.5	1.1
Apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work	98	1.9	1.1	3.7	1.2	3.5	.9
Explain the relationship between the text and extrinsic materials (e.g., biographical, historical, mythological)	92	1.7	.9	3.4	1.0	3.3	1.0
Analyze literary forms in terms of:							
a) stylistic techniques (e.g., style, tone, form)	96	2.1	1.1	3.7	1.1	3.5	.9
b) connotation (e.g., word, image, sound)	96	2.3	1.1	4.0	1.0	3.6	.9
Evaluate written and oral critiques	90	2.2	1.0	3.7	1.2	3.5	1.2

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 7 indicating Mastery, Competence in High Level, Creative Situations. See English questionnaire for details

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 1.49 (Cont'd)
SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	
Media								
Critically assess film, television, magazines, newspapers, etc.	49	2.1	1.2	3.4	1.3	3.3	1.1	4.7 1.3 41
Present a mass media production	20	1.8	1.4	2.9	1.7	2.9	1.4	4.2 1.9 20
Language								
Comprehend a variety of materials (essential meaning and significant details)	94	2.7	.9	4.3	1.0	4.1	.9	5.6 .9 84
Understand the subtler nuances of language (e.g., emotional connotation of words, imaginative effects of language use)	98	2.3	1.0	3.9	1.1	3.8	.9	5.5 1.1 86
Distinguish between essential and non-essential information	94	2.7	1.1	4.3	1.1	4.1	.8	5.8 .9 76
Support generalizations with appropriate evidence	94	2.7	1.1	4.4	1.1	4.1	.8	5.9 .9 82
Apply inferential skills	96	2.1	1.1	3.9	1.2	3.7	.9	5.4 1.0 80
Analyze language in terms of:								
a) grammar	84	1.8	1.1	3.1	1.0	3.6	.8	5.2 1.1 82
b) linguistics (origin and characteristics)	65	1.0	1.0	2.3	1.2	2.6	1.3	3.8 1.6 63
Apply flexibility in the speed of reading appropriate to content and purpose	65	2.5	1.1	3.7	1.1	4.0	1.0	5.3 1.0 65
Write an effective sentence	96	3.0	1.1	4.6	1.1	4.6	1.0	6.1 .9 84

TABLE 1.49 (Cont'd)

SECONDARY SCHOOL ENGLISH YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN	
Language (Cont'd)								
Write an effective paragraph	100	2.8	1.1	4.6	1.0	4.6	.9	6.0 .8 94
Demonstrate facility in writing in terms of planning, organization, presentation and editing:								
a) essays, (expository prose)	98	2.8	1.1	4.5	1.0	4.4	.9	5.9 .9 88
b) creative writing (personal essays, descriptions, poems, short stories, etc.)	65	2.8	1.3	4.0	1.2	4.1	1.1	5.4 1.3 57
c) precis, summary and abstract	73	2.3	1.4	3.9	1.0	3.9	1.0	5.2 1.1 63
d) memos	20	1.7	1.5	2.5	1.9	3.1	1.9	4.0 2.3 20
e) letters	24	2.4	1.5	3.3	1.9	3.8	1.7	4.8 2.0 25
f) reports	53	2.6	1.0	3.9	1.3	3.7	1.2	5.2 1.5 49
g) editorials	35	2.5	1.3	3.9	1.3	3.7	1.4	5.0 1.5 29
In written work								
Use language in a grammatically appropriate manner	88	3.0	1.1	4.3	1.0	4.4	.9	5.9 .8 80
Use words with precision	98	2.4	1.0	4.0	1.1	4.1	.9	5.7 .9 88
Use words with subtlety	96	1.9	1.0	3.5	1.1	3.8	1.0	5.4 1.0 92
Write in a style appropriate to content and audience	90	2.6	1.0	4.1	1.2	4.1	.9	5.6 1.0 73

TABLE 1.49 (Cont'd)

SECONDARY SCHOOL ENGLISH YEAR 5

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT		
In written work (Cont'd)											
Use language imaginatively in writing											
a) poetry	41	1.9	1.2	3.2	1.6	3.2	1.2	4.5	1.5	39	
b) prose	86	2.6	1.0	4.1	1.2	4.0	1.0	5.5	.9	78	
Present an argument effectively	92	2.7	1.0	4.2	1.1	4.1	.8	5.7	.9	90	
Use effective note-taking techniques	80	2.3	1.1	4.0	1.1	4.0	.8	5.5	.9	78	
In oral work											
Speak in a style appropriate to audience and subject matter	78	2.5	1.1	3.8	1.2	3.9	.8	5.4	1.0	71	
Use words with precision	88	2.3	1.0	3.7	1.2	3.8	.8	5.4	1.0	82	
Use words with subtlety	78	2.0	1.1	3.3	1.3	3.7	.8	5.2	1.0	80	
Present an argument effectively	84	2.6	1.0	4.0	1.1	3.9	.9	5.4	1.0	76	
Contribute effectively in a small group discussion	78	2.9	1.1	4.4	1.2	4.1	.9	5.7	1.0	59	
Participate in a dramatic performance	47	1.9	1.1	3.4	1.6	3.1	1.2	4.6	1.6	39	
Use research techniques effectively											
a) use library efficiently	86	2.9	1.0	4.5	1.1	4.2	1.0	5.8	1.0	75	
(indexes, reference materials)											
b) use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography)	90	2.4	1.2	4.4	1.2	3.9	1.0	5.7	1.1	73	

TABLE 2.1
COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	TOTAL
Teaching at community college	0	1	9	2	1	5	7	12	8	4	3	1	0	0	0	0	0	0	0	0	0	53
Teaching this course (or its equivalent)	0	11	9	4	4	8	6	4	4	2	1	0	0	0	0	0	0	0	0	0	0	53
Related professional (non-teaching) Experience	26	7	1	2	3	4	0	1	0	0	2	0	1	0	1	1	0	0	1	0	2	52

TABLE 2.2
COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	10	21
Elementary	5	10
Secondary	9	19
University	11	23
Other	7	15
More than one other	6	12
Total	48	100

TABLE 2.3

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1	
	N	%
Doctorate	1	2
Master's	22	43
Honour Bachelor's (4 year)	14	28
Bachelor's	12	23
Post-Secondary Diploma	1	2
Other	1	2
Total	51	100

TABLE 2.4

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHER'S POSITION IN SCHOOL

	YEAR 1	
	N	%
Teaching Master	48	91
Instructor	4	7
Counsellor	0	0
Other	1	2
Total	53	100

TABLE 2.5

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 1	
	N	%
Yes, it is my area	22	42
Yes, it is closely related	24	45
No	7	13
Total	53	100

TABLE 2.6

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Interests of students	18	35	24	46	8	15	2	4	52	
Knowledge of subject of incoming students	35	66	8	15	3	6	7	13	53	
Relationship between this course and others taken concurrently	22	43	15	29	8	16	6	12	51	
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	14	28	20	40	8	16	8	16	50	
Ontario Ministry of Education guidelines	-	-	3	8	4	11	30	81	37	
Course outline assigned to you	20	42	6	13	6	13	15	32	47	
Special interests or training you might have	19	37	19	37	9	17	5	9	52	
Content and approach of principal text(s)	10	22	15	33	7	15	14	30	46	
Staffing	7	17	6	15	2	5	26	63	41	
Other	7	17	3	7	-	-	32	76	42	

TABLE 2.7

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 1	
	N	%
Yes	16	31
No	36	69
Total	52	100

TABLE 2.8

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
Excellent	-	-
Good	3	6
Fair	31	63
Poor	15	31
Total	49	100

TABLE 2.9

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
A great deal	46	87
A moderate amount	5	9
Very little	2	4
Do not know	-	-
Total	53	100

TABLE 2.10

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 1	
	N	%
Great extent	12	23
Moderate extent	13	24
Small extent	12	23
Not at all	16	30
Total	53	100

TABLE 2.11

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	-	-	19	45	10	24	6	14	2	5	3	7	2	5	-	-	42	15.8	16.4
Socratic (question and answer technique, interaction between students and instructor)	-	-	15	32	12	25	7	15	4	9	4	9	5	10	-	-	47	22.6	19.5
Small group activities (with the instructor supervising a number of small groups)	-	-	16	57	5	17	4	14	1	4	1	4	1	4	-	-	28	9.1	14.1
Seminar, tutorial (with or without additional instructors; this technique may include student presentations)	-	-	13	57	4	17	5	22	-	1	4	-	-	-	-	-	23	6.4	10.4
Student presentations (exclusive of seminars, tutorials)	-	-	20	77	5	19	1	4	-	-	-	-	-	-	-	-	26	4.9	6.4
Testing	-	-	36	84	6	14	1	2	-	-	-	-	-	-	-	-	43	7.1	5.8
Audiovisual (television, tapes, films, etc.)	-	-	27	77	6	17	2	6	-	-	-	-	-	-	-	-	35	5.8	6.7
Field trips, visits by resource personnel	-	-	9	100	-	-	-	-	-	-	-	-	-	-	-	-	9	.8	2.2
Dramatic presentations (plays, excerpts from plays, role-playing, etc.)	-	-	13	100	-	-	-	-	-	-	-	-	-	-	-	-	13	1.0	2.1
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	-	-	27	68	7	17	3	8	1	2	2	5	-	-	-	-	40	9.8	11.6
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	-	-	10	44	1	4	2	9	-	-	3	13	4	17	3	13	23	15.3	27.2
Other	-	-	7	88	-	-	1	12	-	-	-	-	-	-	-	-	8	1.2	4.4

TABLE 2.12
COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	15	33	9	19	7	15	15	33	46
Main text plus supplementary text(s)	10	22	5	11	10	22	20	45	45
Two or more main texts or materials from other texts	16	34	8	17	4	9	19	40	47
Reference books, dictionaries, encyclopedias, etc.	11	22	24	47	14	27	2	4	51
Documents, journals and scholarly reviews	5	10	7	14	15	30	23	46	50
Individualized learning packages	12	25	2	4	3	6	32	65	49
Other classroom resources (magazines, information kits, newspapers, etc.)	7	14	8	16	18	35	18	35	51
Audiovisual media (television, tapes, film strips, etc.)	7	14	16	31	16	31	12	24	51
Mimeographed materials (lecture notes, etc.)	12	24	15	30	13	26	10	20	50
Other	3	6	4	8	3	6	40	80	50

TABLE 2.13

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1	
	N	%
0%*	-	-
1-25%	8	18
26-50%	11	24
51-75%	2	4
76-100%	16	36
101-150%	4	9
151-200%	3	7
201+	1	2
Total	45	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 2.14

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 1	
	N	%
Yes	14	26
No	12	23
Not applicable	27	51
Total	53	100

TABLE 2.15
COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	1	10	2	20	2	20	2	20	-	-	1	10	2	20	10	43.8	30.8
Mid-term examination	-	-	3	38	5	62	-	-	-	-	-	-	-	-	-	-	8	2.2	5.5
Other written tests	-	-	7	21	9	28	2	6	3	9	6	18	5	15	1	3	33	20.9	23.3
Other oral tests	-	-	6	60	3	30	1	10	-	-	-	-	-	-	-	-	10	2.3	5.6
Individual papers (essays, reports, book reports, etc.)	-	-	2	5	12	28	6	14	7	16	5	12	8	18	3	7	43	31.8	24.1
Group or team papers	-	-	3	75	1	25	-	-	-	-	-	-	-	-	-	-	4	.9	3.4
Individual projects (exclusive of essays, reports)	-	-	5	46	4	36	2	18	-	-	-	-	-	-	-	-	11	3.5	7.6
Group or team projects	-	-	5	83	-	-	-	-	1	17	-	-	-	-	-	-	6	1.5	5.9
Class participation	-	-	19	66	7	24	2	7	-	-	1	3	-	-	-	-	29	7.0	9.7
Effort	-	-	12	63	4	21	-	-	1	5	2	11	-	-	-	-	19	5.5	11.4
Attendance	-	-	11	69	2	12	1	7	-	-	2	12	-	-	-	-	16	4.3	10.3
Individual oral pre- sentations (prepared or spontaneous speeches)	-	-	13	72	3	17	2	11	-	-	-	-	-	-	-	-	18	4.3	7.4
Group dramatic presentations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Other	-	-	4	58	-	-	1	14	1	14	-	-	-	-	1	14	7	3.2	12.7

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 2.16
COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Explore the universal elements in human experience through the study of literature	7	16	5	11	11	25	21	48	44	1.0	1.1
Develop student's ability to listen effectively	12	23	22	42	11	21	7	14	52	1.8	1.0
Develop sense of self-worth and confidence	22	42	20	38	6	11	5	9	53	2.1	0.9
Cultivate student's discrimination in reading	19	36	21	40	8	15	5	9	53	2.0	0.9
Develop respect and tolerance for diverse opinions and ideas; encourage a broader perspective	22	42	16	31	8	15	6	12	52	2.0	1.0
Promote fluent and grammatically acceptable spoken English	21	42	18	36	8	16	3	6	50	2.1	0.9
Develop appreciation of the historical development of English literature	1	2	3	7	9	20	31	71	44	0.4	0.7
Develop student's ability to organize and integrate ideas and materials	39	75	10	19	2	4	1	2	52	2.7	0.6
Develop an attitude of enquiry	22	41	20	38	8	15	3	6	53	2.2	0.9
Develop a discipline to initiate a piece of work and complete it in a given time	28	53	17	32	6	11	2	4	53	2.3	0.8

TABLE 2.16 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Promote fluent and grammatically acceptable <u>written</u> English	44	85	6	11	1	2	1	2	52	2.8	.6
Improve student's understanding of the characteristics of the language	20	38	15	29	15	29	2	4	52	2.0	0.9
Improve a student's reading ability	26	50	16	31	8	15	2	4	52	2.3	0.9
Develop student's desire to read	20	38	16	31	12	23	4	8	52	2.0	1.0
Develop awareness of the literary and cultural heritage of the English language	7	15	3	7	13	28	23	50	46	0.9	1.1
Enrich the student's spoken and written vocabulary	22	42	23	44	5	10	2	4	52	2.3	0.8
Develop student's creative potential	11	21	21	41	10	19	10	19	52	1.6	1.0
Develop an appreciation of literature	10	22	9	20	9	20	17	38	45	1.3	1.2
Develop an appreciation of media other than literature (e.g. film, television, etc.)	4	9	9	20	14	31	18	40	45	1.0	1.0
Develop student's ability to think critically	32	60	13	25	6	11	2	4	53	2.4	0.8
Other	12	23	1	2	-	-	38	75	51	0.7	1.3

TABLE 2.17

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Literature	-	-	5	29	4	24	3	18	-	-	5	29	17	11.1	22.4
Media other than literature	-	-	17	68	7	28	1	4	-	-	-	-	25	5.7	8.1
.critical assessment	-	-	7	78	2	22	-	-	-	-	-	-	9	1.6	4.4
.media production	-	-	7	78	2	22	-	-	-	-	-	-	9	1.6	4.4
Language skills	-	-	17	38	15	33	7	16	2	4	4	9	45	20.3	22.1
.reading	-	-	6	13	1	2	14	29	9	19	18	37	48	44.3	28.3
.writing	-	-	22	55	9	23	9	23	-	-	-	-	40	12.0	11.4
.speaking	-	-	22	55	9	23	9	23	-	-	-	-	40	12.0	11.4

TABLE 2.18

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N		%	
	N	%	N	%
A variety of approaches (more than 2)	4	25		
By form and style	1	6		
By genre	1	6		
By ideas and concepts	3	19		
By modes (e.g., comedy, tragedy, satire)	1	6		
Thematic (e.g., women in literature)	4	25		
By culture or country	2	13		
Historical	-	-		
Other	-	-		
Total	16	100		

TABLE 2.19

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH GENRE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Essays	-	-	4	45	3	33	1	11	1	11	-	-	9	3.2	8.8
Novels	-	-	1	9	3	27	5	46	1	9	1	9	11	6.4	15.1
Plays	-	-	4	50	3	38	1	12	-	-	-	-	8	2.3	6.1
Poems	-	-	4	33	4	33	3	25	1	8	-	-	12	4.8	10.7
Short stories	-	-	3	23	2	15	5	39	1	8	2	15	13	7.9	17.6
Other	-	-	3	50	2	34	1	16	-	-	-	-	6	1.7	5.1

TABLE 2.20

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO PRE-TWENTIETH CENTURY
AND TWENTIETH CENTURY LITERATURE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Pre-twentieth century	-	-	3	30	2	20	4	40	-	-	1	10	10	5.0	13.8
Twentieth century	-	-	-	-	1	7	-	-	-	-	13	93	14	21.4	37.4

TABLE 2.21

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH ORIGIN"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%			
Canadian	-	-	-	-	1	7	4	29	1	7	8	57	14	18.3	33.9
American	-	-	2	20	3	30	5	50	-	-	-	-	10	4.8	11.2
British	-	-	3	42	2	29	2	29	-	-	-	-	7	2.1	6.6
Other English speaking	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Literature in translation	-	-	-	-	2	67	1	33	-	-	-	-	3	1.3	5.5

TABLE 2.22

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS ^b	
		MEAN ^a	S.D.	ENTRY	EXIT	MEAN	S.D.
Language							
Comprehend a variety of materials (essential meaning and significant details)	85	1.8	.9	3.6	1.2	3.5	.9
Understand the subtler nuances of language (e.g., emotional connot- ation of words, imaginative effects of language use)	87	1.2	.9	2.8	1.2	3.4	1.0
Distinguish between essential and non-essential information	89	1.8	.9	3.7	1.0	3.5	.9
Support generalizations with appropriate evidence	92	1.4	.9	3.5	1.3	3.4	.9
Apply Inferential skills	91	1.3	.9	2.9	1.3	3.1	1.0
Analyze language in terms of:							
a) grammar	81	.9	.7	3.0	1.2	3.4	1.1
b) linguistics (origin and characteristics)	53	.5	.6	1.7	1.2	2.3	1.5
Apply flexibility in the speed of reading appropriate to content and purpose	72	1.2	.9	3.1	1.2	3.4	1.2
						5.4	1.0

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 7 indicating Mastery, Competence in High Level, Creative Situations. See English questionnaire for details

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 2.22 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		ENTRY MEAN	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN			
Write an effective sentence	91	1.9	1.2	3.8	1.2	3.8	1.2	5.7	1.1	89
Write an effective paragraph	89	1.8	1.3	3.7	1.3	3.7	1.1	5.6	1.0	89
Demonstrate facility in writing in terms of planning, organization, presentation and editing:										
a) essays, (expository prose)	77	1.3	.9	3.4	1.2	3.2	.9	5.3	1.0	85
b) creative writing (personal essays, descriptions, poems, short stories, etc.)	36	1.2	.8	2.6	1.5	2.7	1.1	4.7	1.4	47
c) precis, summary and abstract	74	1.1	.8	3.1	1.1	3.2	.9	5.3	1.0	77
d) memos	57	1.1	.8	3.2	1.3	2.9	.9	5.3	.9	62
e) letters	64	1.2	.7	3.5	1.1	3.1	.8	5.4	.8	66
f) reports	66	1.0	.8	3.6	1.0	2.9	.9	5.4	.7	64
g) editorials	21	.5	.6	2.3	1.5	2.4	1.5	4.2	2.0	25
In written work										
Use language in a grammatically appropriate manner	92	1.8	.9	3.5	1.0	3.5	1.1	5.4	1.1	87
Use words with precision	92	1.4	.8	3.1	.9	3.3	1.0	5.4	1.0	91
Use words with subtlety	81	1.0	.9	2.6	1.2	3.0	1.1	5.0	1.1	83
Write in a style appropriate to content and audience	85	1.2	.9	3.2	1.1	3.1	1.0	5.2	1.0	83

TABLE 2.22 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		ENTRY		EXIT		ENTRY		EXIT			
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.		%
Use language imaginatively in writing											
a) poetry	15	1.1	1.2	1.9	1.5	2.6	1.3	3.9	1.7	23	
b) prose	49	1.3	1.1	2.7	1.5	3.0	1.0	4.9	1.3	55	
Present an argument effectively	87	1.3	.9	3.0	1.3	3.1	1.0	5.2	1.0	87	
Use effective note-taking techniques	68	1.1	.9	2.8	1.3	3.1	.9	5.1	1.2	72	
In oral work											
Speak in a style appropriate to audience and subject matter	66	1.6	1.0	3.3	1.4	3.1	.8	5.2	1.1	60	
Use words with precision	72	1.2	.8	3.0	1.1	3.0	.9	5.1	1.0	72	
Use words with subtlety	68	.8	.9	2.4	1.1	2.7	1.0	4.5	1.0	68	
Present an argument effectively	74	1.1	.9	3.0	1.1	3.0	1.0	5.1	1.1	74	
Contribute effectively in a small group discussion	64	2.0	1.3	3.6	1.4	3.4	1.0	5.3	1.0	57	
Participate in a dramatic performance	17	.8	.9	2.1	1.9	2.2	1.5	3.6	2.6	21	
Use research techniques effectively:											
a) use library efficiently (indexes, reference materials)	70	1.0	.9	3.2	1.3	3.0	.8	5.2	.9	70	
b) use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography)	70	.6	.9	3.2	1.3	2.9	1.0	5.0	.9	70	57

TABLE 2.22 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY ENGLISH YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	
Media								
Critically assess film, television, magazines, newspapers, etc.	45	1.2	.9	3.2	1.2	3.0	.9	5.0 1.1 45
Present a mass media production	13	.4	1.2	1.3	1.6	1.9	1.4	2.9 2.1 15
Literature								
Analyze literature through an examination of its characteristics	26	1.4	.9	3.0	1.4	3.1	1.3	4.8 1.9 28
Analyze literature in terms of the relationship of organization to meaning	28	.9	.8	2.6	1.3	2.8	1.1	4.5 1.7 30
Identify literary genres by examination of its characteristics	19	.6	.8	1.9	1.2	2.5	1.4	3.7 1.9 23
Write a literary critique	19	1.1	1.1	2.4	1.8	2.7	1.6	4.2 2.2 23
Apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work	19	.8	.7	2.2	1.5	2.6	1.6	3.9 2.1 23
Explain the relationship between the text and extrinsic materials (e.g., biographical, historical, mythological)	19	.6	.7	1.8	1.6	2.3	1.4	3.8 2.2 25
Analyze literary forms in terms of:								
a) stylistic techniques (e.g., style, tone, form)	25	.7	.8	1.9	1.4	2.2	1.3	3.7 2.0 26
b) connotation (e.g., word, image, sound)	28	.8	1.2	2.2	1.7	2.5	1.4	4.1 2.1 32
Evaluate written and oral critiques	23	.8	.9	2.1	1.4	2.4	1.3	3.9 2.1 23

TABLE 3.1
UNIVERSITY ENGLISH YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS															
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	TOTAL	
University teaching	0	1	1	1	3	1	2	0	0	1	2	7	1	6	26	
Teaching this course (or its equivalent)	0	6	2	3	3	1	0	0	2	0	3	3	0	3	26	

TABLE 3.2
UNIVERSITY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	16	61
Elementary	0	0
Secondary	7	27
Community college	0	0
Other	2	8
More than one other	1	4
Total	26	100

TABLE 3.3
UNIVERSITY ENGLISH
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1	
	N	%
Doctorate	17	65
Master's	9	35
Honour Bachelor's (4 year)	0	0
Bachelor's	0	0
Post-Secondary Diploma	0	0
Other	0	0
Total	26	100

TABLE 3.4
UNIVERSITY ENGLISH
UNIVERSITY CATEGORY

	YEAR 1	
	N	%
Professor	9	34
Associate Professor	7	27
Assistant Professor	7	27
Lecturer/Instructor	2	8
Other	1	4
Total	26	100

TABLE 3.5
UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Interests of students	12	46	11	42	3	12	-	-	-	-	26
Knowledge of subject of incoming students	7	27	8	31	7	27	4	15	-	-	26
Relationship between this course and others taken concurrently	3	12	3	12	9	34	10	38	1	4	26
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	2	8	9	34	6	23	8	31	1	4	26
Ontario Ministry of Education guidelines	-	-	-	-	10	38	16	62	-	-	26
Course outline assigned to you	11	42	2	8	1	4	7	27	5	19	26
Special interests or training you might have	17	65	6	23	3	12	-	-	-	-	26
Content and approach of principal text(s)	13	50	4	15	3	12	4	15	2	8	26
Staffing	3	14	3	14	4	19	6	29	5	24	21
Other	4	28	-	-	-	-	5	36	5	36	14

TABLE 3.6

UNIVERSITY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 1	
	N	%
Yes	3	12
No	22	88
Total	25	100

TABLE 3.7

UNIVERSITY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
Excellent	-	-
Good	2	8
Fair	19	76
Poor	4	16
Total	25	100

TABLE 3.8

UNIVERSITY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
A great deal	22	85
A moderate amount	3	11
Very little	1	4
Do not know	-	-
Total	26	100

TABLE 3.9

UNIVERSITY ENGLISH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 1	
	N	%
Great extent	1	4
Moderate extent	3	11
Small extent	5	20
Not at all	17	65
Total	26	100

TABLE 3.10

UNIVERSITY ENGLISH YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO

"WHAT PERCENTAGE OF IN CLASS INSTRUCTION IS DEVOTED TO EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%			1-10%			11-20%			21-30%			31-40%			41-50%			51-75%			76+%			TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%					
Lecture (with or without provision for student questions)	2	8	2	8	3	12	3	12	3	12	3	12	7	24	3	12	26	40.7	25.3								
Socratic (question and answer technique interaction between students and instructor)	6	23	2	8	4	15	4	15	2	8	1	4	6	23	1	4	26	28.4	25.4								
Small group activities (with the instructor supervising a number of small groups)	22	85	2	7	1	4	1	4	-	-	-	-	-	-	-	-	26	2	5.7								
Seminar, tutorial (with or without additional instructors; this technique may include student presentations)	13	50	3	12	2	7	3	12	4	15	1	4	-	-	-	-	26	12	15.1								
Student presentations (exclusive of seminars, tutorials)	20	77	5	19	1	4	-	-	-	-	-	-	-	-	-	-	26	1.7	3.5								
Testing	10	38	14	54	2	8	-	-	-	-	-	-	-	-	-	-	26	4.2	4.2								
Audiovisual (television, tapes, films, etc.)	19	73	7	27	-	-	-	-	-	-	-	-	-	-	-	-	26	1.5	2.4								
Field trips, visits by resource personnel	24	92	2	8	-	-	-	-	-	-	-	-	-	-	-	-	26	.4	1.5								
Dramatic presentations (plays, excerpts from plays, role-playing, etc.)	24	92	2	8	-	-	-	-	-	-	-	-	-	-	-	-	26	.4	1.5								
Other	25	96	-	-	-	-	-	-	1	4	-	-	-	-	-	-	-	1.4	6.8								

TABLE 3.11
UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Main text	16	61	-	-	1	4	2	8	7	27	26
Main text plus supplementary text(s)	4	17	7	29	3	13	2	8	8	33	24
Two or more main texts or materials from other texts	14	56	2	8	2	8	5	20	2	8	25
Reference books, dictionaries, encyclopedias, etc.	3	11	7	27	15	58	1	4	-	-	26
Documents, journals and scholarly reviews	1	4	5	20	9	36	9	36	1	4	25
Other classroom resources (magazines, information kits, newspapers, etc.)	-	-	-	-	5	20	17	68	3	12	25
Audiovisual media (television, tapes, film strips, etc.)	-	-	-	-	6	25	16	67	2	8	24
Mimeographed materials (lecture notes, etc.)	-	-	3	12	10	42	10	42	1	4	24
Other	1	7	-	-	-	-	13	86	1	7	15

TABLE 3.12

UNIVERSITY ENGLISH

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
 STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1	
	N	%
0%*	-	-
1-25%	-	-
26-50%	-	-
51-75%	-	-
76-100%	4	16
101-150%	2	8
151-200%	13	52
200%+	6	24
Total	25	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 3.13

UNIVERSITY ENGLISH

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
 WRITING THE FINAL EXAMINATION?"

	YEAR 1	
	N	%
Yes	2	16
No	23	76
Not applicable	1	8
Total	26	100

TABLE 3.14

66

UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		75% +		TOTAL MEAN		S.D.	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%				
Final examination*	2	8	-	-	3	11	7	27	12	46	2	8	-	-	-	-	26	28.5	16.3	
Mid-term examination	11	42	2	8	12	46	1	4	-	-	-	-	-	-	-	-	26	8.6	8.1	
Other written tests	15	58	4	15	4	15	1	4	1	4	-	-	1	4	-	-	26	8	9.9	
Other oral tests	22	84	2	8	1	4	-	-	1	4	-	-	-	-	-	-	26	2.4	7.4	
Individual papers (essays reports, book reports etc.)	4	14	1	4	3	12	3	12	6	23	2	8	6	23	1	4	26	34.3	23.3	
Group or team papers	25	96	1	4	-	-	-	-	-	-	-	-	-	-	-	-	26	.2	1.1	
Individual projects (exclusive of essays, reports)	26	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	.0	.0	
Group or team projects	25	96	1	4	-	-	-	-	-	-	-	-	-	-	-	-	26	.2	1.1	
Class participation	11	42	13	50	1	4	1	4	-	-	-	-	-	-	-	-	26	4.3	5.5	
Effort	20	77	6	23	-	-	-	-	-	-	-	-	-	-	-	-	26	1.3	2	
Attendance	23	88	3	12	-	-	-	-	-	-	-	-	-	-	-	-	26	.6	1.8	
Individual oral presenta- tions (prepared or spon- taneous speeches)	23	88	1	4	2	8	-	-	-	-	-	-	-	-	-	-	26	1.4	3.9	
Group dramatic presentations	26	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	.0	.0	
Other	25	96	-	-	1	4	-	-	-	-	-	-	-	-	-	-	26	.6	6.6	

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 3.15

UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		Not Applicable		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%			
Explore the universal elements in human experience through the study of literature	17	65	8	31	1	4	-	-	-	-	26	2.6	0.6
Develop student's ability to listen effectively	3	12	11	42	8	31	3	11	1	4	26	1.8	0.8
Develop sense of self-worth and confidence	7	28	9	36	4	16	4	16	1	4	25	1.8	1
Cultivate student's discrimination in reading	18	69	7	27	1	4	-	-	-	-	26	2.7	0.6
Develop respect and tolerance for diverse opinions and ideas; encourage a broader perspective	17	65	6	23	3	12	-	-	-	-	26	2.5	0.7
Promote fluent and grammatically acceptable spoken English	9	35	9	35	6	23	2	7	-	-	26	2	0.9
Develop appreciation of the historical development of English literature	12	46	6	23	4	15	3	12	1	4	26	2	1.1
Develop student's ability to organize and integrate ideas and materials	23	88	2	8	1	4	-	-	-	-	26	2.9	0.5
Develop an attitude of enquiry	20	77	4	15	2	8	-	-	-	-	26	2.7	0.6
Develop a discipline to initiate a piece of work and complete it in a given time	14	54	9	35	3	11	-	-	-	-	26	2.8	0.6
Promote fluent and grammatically acceptable written English	23	88	2	8	1	4	-	-	-	-	26	2.9	0.5

TABLE 3.15 (Cont'd)

UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		Not Applicable		TOTAL MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%		
Improve student's understanding of the characteristics of the language	10	39	11	42	4	15	-	-	1	4	26	2.2 0.7
Improve student's reading ability	18	72	6	24	1	4	-	-	-	-	25	2.7 0.1
Develop student's desire to read	14	56	9	36	1	4	1	4	-	-	25	2.4 0.8
Develop awareness of the literary and cultural heritage of the English language	15	60	6	24	3	12	1	4	-	-	25	2.4 0.8
Enrich the student's spoken and written vocabulary	9	35	12	46	4	15	1	4	-	-	26	2.1 0.8
Develop student's creative potential	9	34	5	19	8	31	2	8	2	8	26	1.8 1
Develop an appreciation of literature	24	92	1	4	1	4	-	-	-	-	26	2.9 0.4
Develop an appreciation of media other than literature (e.g. film, television, etc.)	2	8	7	28	5	20	9	36	2	8	25	1 1
Develop student's ability to think critically	23	88	3	12	-	-	-	-	-	-	26	2.9 0.4
Other	2	40	-	-	-	-	2	40	1	20	5	1.5 1.5

TABLE 3.16
UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-10%		11-20%		21-40%		41-50%		51-60%		61-70%		71-80%		81-100%		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Literature	-	-	-	-	-	-	2	8	2	8	2	8	4	15	4	15	12	46	26	
Media other than literature																				
.critical assessment	21	81	3	11	-	-	2	8	-	-	-	-	-	-	-	-	-	-	26	
.media production	25	96	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	
Language skills (reading, writing, speaking)	3	12	10	38	4	15	7	27	2	8	-	-	-	-	-	-	-	-	26	

TABLE 3.17
UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N		%	
A variety of approaches (more than 2)	13	52		
By form and style	2	8		
By genre	1	4		
By ideas and concepts	2	8		
By modes (e.g., comedy, tragedy, satire)	-	-		
Thematic (e.g., women in literature)	1	4		
By culture or country	1	4		
Historical	3	12		
Other	2	8		
Total	25	100		

TABLE 3.18

UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH GENRE"

	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	
Essays	16	64	6	24	2	8	1	4	-	-	-	-	25
Novels	4	16	3	12	2	8	10	40	3	12	3	12	25
Plays	6	24	4	16	7	28	7	28	1	4	-	-	25
Poems	16	64	6	24	3	12	-	-	-	-	-	-	25
Short stories	3	12	2	8	3	12	9	36	4	16	4	16	25
Other	21	84	-	-	-	-	2	8	-	-	2	8	25

TABLE 3.19

UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO PRE-TWENTIETH CENTURY
AND TWENTIETH CENTURY LITERATURE"

	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	
Pre-twentieth century	3	12	2	8	2	8	3	12	3	12	12	48	25
Twentieth century	2	8	3	12	5	20	2	8	2	8	11	44	25

TABLE 3.20

UNIVERSITY ENGLISH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH ORIGIN"

	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	
Canadian	11	44	7	28	4	16	1	4	1	4	1	4	25
American	9	36	4	16	3	12	5	20	4	16	-	-	25
British	2	8	-	-	-	-	4	16	4	16	15	60	25
Other English speaking	25	100	-	-	-	-	-	-	-	-	-	-	25
Literature in translation	16	64	6	24	2	8	1	4	-	-	-	-	25

TABLE 3.21
UNIVERSITY ENGLISH YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Literature										
Analyze literature through an examination of its characteristics	88	1.8	.9	3.8	1.1	3.4	.8	5.6	.7	88
Analyze literature in terms of the relationship of organization to meaning	81	1.4	1.3	3.4	1.3	3.3	1.1	5.5	.6	77
Identify literary genres by examination of its characteristics	85	1.7	1.5	3.8	1.4	3.9	1.2	5.3	.8	85
Write a literary critique	85	1.4	1.0	3.8	1.3	3.5	.8	5.6	.6	81
Apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work	92	1.0	1.1	3.2	1.2	3.4	.8	5.6	.7	92
Explain the relationship between the text and extrinsic materials (e.g., biographical, historical, mythological)	88	1.3	1.1	3.7	1.2	3.4	1.0	5.6	.9	85
Analyze literary forms in terms of:										
a) stylistic techniques (e.g., style, tone, form)	92	1.0	1.1	3.1	1.3	3.3	1.0	5.4	1.1	85
b) connotation (e.g., word, image, sound)	88	1.3	1.1	3.4	1.3	3.3	.9	5.5	.8	85
Evaluate written and oral critiques	69	2.6	1.7	3.6	1.2	3.5	1.2	5.5	.9	62

^a The means in this table are based on a response key which ranges from 0 indicating No Competence to 7 indicating Mastery, Competence in High Level, Creative Situations. See English questionnaire for details

^b The figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 3.21 (Cont'd)

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UNIVERSITY ENGLISH YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	
<u>Media</u>								
Critically assess film, television, magazines, newspapers, etc.	19	1.0	.7	2.8	1.0	3.2	.4	5.6 .9 19
Present a mass media production	4	1.5	.7	2.0	1.4	2.0	1.4	4.0 1.4 4
<u>Language</u>								
Comprehend a variety of materials (essential meaning and significant details)	88	2.1	1.3	4.0	1.3	3.7	1.2	5.7 .7 81
Understand the subtler nuances of language (e.g., emotional connotation of words, imaginative effects of language use)	96	1.4	1.0	3.6	1.1	3.3	1.0	5.3 1.3 92
Distinguish between essential and non-essential information	85	1.9	1.0	3.5	1.3	3.5	1.0	5.5 .9 81
Support generalizations with appropriate evidence	96	1.4	1.0	3.8	.2	3.4	.9	5.7 .8 96
Apply inferential skills	73	1.4	.9	3.4	1.2	3.2	1.1	5.4 .8 77
Analyze language in terms of:								
a) grammar	62	1.0	1.1	3.2	1.2	3.2	.9	5.1 1.0 81
b) linguistics (origin and characteristics)	50	1.3	1.1	3.7	1.2	2.6	1.2	4.1 1.9 65
Apply flexibility in the speed of reading appropriate to content and purpose	54	1.1	1.1	3.2	1.4	3.1	.8	5.4 .7 50
Write an effective sentence	81	1.9	1.0	3.9	1.1	3.7	.9	5.8 .9 92

TABLE 3.21(Cont'd)

UNIVERSITY ENGLISH YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Write an effective paragraph	85	1.9	1.5	3.9	1.0	3.7	.9	5.8	.9	54
Demonstrate facility in writing in terms of planning, organization, presentation and editing:										
a) essays, (expository prose)	88	1.8	.9	3.9	.7	3.7	.9	5.6	.8	88
b) creative writing (personal essays, descriptions, poems, short stories, etc.)	38	1.9	1.7	3.8	1.3	3.6	1.0	4.9	1.6	42
c) precis, summary and abstract	35	1.0	.9	3.0	1.3	3.2	.9	5.4	.5	38
d) memos	4	-	-	-	-	-	-	-	-	4
e) letters	4	-	-	-	-	-	-	-	-	4
f) reports	19	2.2	1.3	4.2	1.1	3.5	.8	6.0	.8	15
g) editorials	4	-	-	-	-	-	-	-	-	4
In written work:										
Use language in a grammatically appropriate manner	96	1.9	1.0	3.8	1.1	3.9	1.1	5.6	1.5	58
Use words with precision	92	1.5	1.0	3.4	1.2	3.5	.8	5.7	.9	96
Use words with subtlety	85	1.3	1.1	3.1	1.3	3.5	1.4	5.1	1.1	88
Write in a style appropriate to content and audience	73	1.5	1.3	3.1	.9	3.5	.9	5.5	.9	81

TABLE 3.21 (Cont'd)

UNIVERSITY ENGLISH YEAR 1

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.			
Use language imaginatively in writing:										
a) poetry	19	1.7	1.0	3.2	.8	3.0	.6	4.5	1.2	19
b) prose	62	1.6	.8	3.4	1.2	3.3	1.0	5.3	.8	62
Present an argument effectively	85	1.5	1.1	3.5	1.2	3.5	1.0	5.5	.9	81
Use effective note-taking techniques	62	1.8	1.0	3.7	1.0	3.2	1.1	5.2	1.2	54
In oral work:										
Speak in a style appropriate to audience and subject matter	58	1.8	1.4	3.5	1.8	3.4	.9	5.2	.9	58
Use words with precision	92	1.4	1.0	3.3	1.2	3.4	.8	5.5	.9	69
Use words with subtlety	69	1.0	1.1	2.8	1.2	3.1	.9	4.9	1.0	69
Present an argument effectively	69	1.4	1.2	3.2	1.3	3.3	1.0	5.2	.9	65
Contribute effectively in a small group discussion	62	2.2	1.1	3.8	1.4	3.4	.8	5.3	1.1	50
Participate in a dramatic performance	12	1.7	.6	3.7	1.2	-	-	-	-	12
Use research techniques effectively:										
a) use library efficiently (indexes, reference materials)	73	1.7	1.1	3.6	1.4	3.3	1.1	5.5	1.4	58
b) use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography)	77	1.2	1.1	3.6	1.2	3.3	1.2	5.4	1.1	62

TABLE 4.1
SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS; PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS														TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	
Secondary school teaching	0	0	1	0	1	0	1	1	1	2	1	5	1	0	14
Teaching this course (or its equivalent)	0	2	3	3	1	3	1	1	0	0	0	0	0	0	14

TABLE 4.2
SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 5	
	N	%
No	9	64
Elementary	2	14
Community college	0	0
University	1	7
Other	2	14
More than one other	0	0
Total	14	100

TABLE 4.3

SECONDARY SCHOOL ANGLAIS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 5	
	N	%
Doctorate	-	-
Master's	3	21
Honour Bachelor's (4 year)	6	43
Bachelor's	5	36
Post-Secondary diploma	-	-
Other	-	-
Total	14	100

TABLE 4.4

SECONDARY SCHOOL ANGLAIS
OSSTF/AEFO CERTIFICATION CATEGORY

	YEAR 5	
	N	%
Category 1/A1	-	-
Category 2/A2	4	29
Category 3/A3	-	-
Category 4/A4	10	71
Total	14	100

TABLE 4.5

SECONDARY SCHOOL ANGLAIS
TEACHER'S POSITION IN SCHOOL

	YEAR 5	
	N	%
Principal	-	-
Vice-principal	-	-
Department head	6	42
Assistant or associate head	4	29
Teacher	4	29
Other	-	-
Total	14	100

TABLE 4.6

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 5	
	N	%
Yes, it is my area	10	72
Yes, it is closely related	3	21
No	1	7
Total	14	100

TABLE 4.7

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great		Moderate		Small		Not at		Not		TOTAL
	N	%	N	%	N	%	N	%	Applicable	%	
Interests of students	8	57	5	36	1	7	-	-	-	-	14
Knowledge of subject of incoming students	4	29	8	57	2	14	-	-	-	-	14
Relationship between this course and others taken concurrently	1	7	6	43	4	29	2	14	1	7	14
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	8	57	2	14	1	7	3	22	-	-	14
Ontario Ministry of Education guidelines	1	7	6	43	2	14	4	29	1	7	14
Course outline assigned to you	5	36	4	29	3	21	2	14	-	-	14
Special interests or training you might have	9	64	4	29	-	-	1	7	-	-	14
Content and approach of principal text(s)	6	43	5	36	1	7	2	14	-	-	14
Staffing	1	7	1	7	3	21	6	43	3	21	14

TABLE 4.8

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 5	
	N	%
Yes	8	57
No	6	43
Total	14	100

TABLE 4.9

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 5	
	N	%
Excellent	-	-
Good	5	45
Fair	5	45
Poor	1	10
Total	11	100

TABLE 4.10

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 5	
	N	%
A great deal	10	71
A moderate amount	4	29
Very little	-	-
Do not know	-	-
Total	14	100

TABLE 4.11

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 5	
	N	%
Great extent	-	-
Moderate extent	1	7
Small extent	6	43
Not at all	7	50
Total	14	100

TABLE 4.12

SECONDARY SCHOOL ANGLAIS YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
 EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Dictation	10	71	4	29	-	-	-	-	-	-	-	-	-	-	-	-	14
Translations by students (exclusive of testing)	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Language laboratory	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14
Lecture (with or without provision for student questions)	-	-	5	36	5	36	2	14	1	7	-	-	1	7	-	-	14
Socratic (question and answer technique, interaction between students and instructor)	1	7	1	7	5	36	2	14	1	7	2	14	2	14	-	-	14
Small group activities (with the instructor supervising a number of small groups at the same time)	5	36	8	57	1	7	-	-	-	-	-	-	-	-	-	-	14
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	5	36	7	50	2	14	-	-	-	-	-	-	-	-	-	-	14
Student presentations (exclusive of seminars, tutorials)	4	29	7	50	3	21	-	-	-	-	-	-	-	-	-	-	14
Testing	-	-	12	86	2	14	-	-	-	-	-	-	-	-	-	-	14
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	3	21	9	65	1	7	1	7	-	-	-	-	-	-	-	-	14
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14

TABLE 4.13

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not at All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
main text	6	43	1	7	-	-	4	29	3	21	14
main text plus supplementary text(s)	6	43	3	22	1	7	2	14	2	14	14
two or more main texts or materials from other texts	11	79	1	7	-	-	2	14	-	-	14
simplified editions of great works	-	-	1	7	1	7	11	79	1	7	14
works of criticism	2	14	7	50	4	29	1	7	-	-	14
reference books, dictionaries, encyclopedias, etc.	3	22	10	71	1	7	-	-	-	-	14
individualized learning packages	-	-	-	-	1	7	13	93	-	-	14
other classroom resources (magazines, newspapers, etc.)	-	-	4	29	6	43	4	29	-	-	14
audiovisual media (television, tapes, film strips, etc.)	1	7	7	50	4	29	2	14	-	-	14
language laboratory materials	-	-	-	-	-	-	13	93	1	7	14
mimeographed materials (lecture notes, etc.)	3	21	6	43	3	21	2	15	-	-	14

TABLE 4.14

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"HOW MUCH TIME IS NORMALLY SPENT ON
REVIEW OF MATERIAL TAKEN PRIOR TO THIS COURSE?"

	YEAR 5	
	N	%
0%	6	43
1-10%	5	36
11-20%	1	7
21-30%	1	7
31-40%	-	-
41-50%	-	-
51-75%	1	7
76+%	-	-
Total	14	100

TABLE 4.15

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"WHAT PROPORTION OF THE INSTRUCTION IN
THIS COURSE IS GIVEN IN ENGLISH"

	YEAR 5	
	N	%
100%	12	86
90-99%	2	14
Under 89	-	-
Total	14	100

TABLE 4.16

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 5	
	N	%
0%+	-	-
1-25%	-	-
26-50%	2	15
51-75%	2	15
76-100%	6	46
101-150%	1	8
151-200%	1	8
201%+	1	8
Total	13	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 4.17

SECONDARY SCHOOL ANGLAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 5	
	N	%
Yes	6	42
No	4	29
Not applicable	4	29
Total	14	100

TABLE 4.18

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SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Final Examination*	9	69	-	-	3	23	-	-	1	8	-	-	-	-	-	-	13
Mid-term examination	7	54	-	-	4	30	1	8	-	-	1	8	-	-	-	-	13
Other written tests	-	-	3	23	3	23	3	23	2	15	2	15	-	-	-	-	13
Other oral tests	11	84	1	8	-	-	1	8	-	-	-	-	-	-	-	-	13
Individual papers (essays, reports, book reports, etc.)	1	8	3	23	5	38	1	8	2	15	1	8	-	-	-	-	13
Group or team papers	7	54	6	46	-	-	-	-	-	-	-	-	-	-	-	-	13
Individual projects (exclusive of essays, reports)	7	54	5	38	1	8	-	-	-	-	-	-	-	-	-	-	13
Group or team projects	6	46	7	54	-	-	-	-	-	-	-	-	-	-	-	-	13
Notebooks	10	77	3	23	-	-	-	-	-	-	-	-	-	-	-	-	13
Class participation	2	15	9	69	2	16	-	-	-	-	-	-	-	-	-	-	13
Effort	6	46	7	54	-	-	-	-	-	-	-	-	-	-	-	-	13
Attendance	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Individual oral presentations (prepared or spontaneous speeches)	7	54	5	38	1	8	-	-	-	-	-	-	-	-	-	-	13
Group dramatic presentations	9	69	3	23	1	8	-	-	-	-	-	-	-	-	-	-	13
Other	12	92	-	-	-	-	-	-	1	8	-	-	-	-	-	-	13

* When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 4.19

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		Not Applicable		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Develop ability to listen effectively.	5	36	8	57	1	7	-	-	-	-	14	
Promote fluent and grammatically acceptable spoken English.	10	71	4	29	-	-	-	-	-	-	14	
Promote fluent and grammatically acceptable written English.	12	86	2	14	-	-	-	-	-	-	14	
Develop ability to organize and integrate ideas and materials.	10	71	4	29	-	-	-	-	-	-	14	
Develop creative writing ability.	1	7	12	86	1	7	-	-	-	-	14	
Improve reading ability.	4	29	8	57	2	14	-	-	-	-	14	
Develop desire to read.	9	64	4	29	1	7	-	-	-	-	14	
Enrich spoken and written vocabulary.	8	57	6	43	-	-	-	-	-	-	14	
Develop the discipline to initiate a piece of work and complete it in a given time.	8	57	4	29	2	14	-	-	-	-	14	
Develop an appreciation of literature written and/or translated in the English language.	9	64	4	29	1	7	-	-	-	-	14	
Develop an appreciation of Canadian literature.	5	36	4	29	1	7	3	21	1	7	14	
Develop an appreciation of media other than literature (film, T.V., radio, etc.)	3	21	3	21	6	43	2	14	-	-	14	
Develop student's ability to think critically.	11	79	3	21	-	-	-	-	-	-	14	

TABLE 4.19 (Cont'd)

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Promote understanding of the ways language can be used in a variety of social contexts.	3	21	5	36	4	29	2	14	-	-	14
Develop an understanding of different linguistic interpretation that can result from differences in the English and French languages.	1	7	5	36	5	36	3	21	-	-	14
Develop appreciation of the historical development of English literature.	4	29	6	43	2	14	2	14	-	-	14
Explore the universal elements in human experience through the study of literature.	7	50	7	50	-	-	-	-	-	-	14

TABLE 4.20

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-10%		11-20%		21-40%		41-50%		51-60%		61-70%		71-80%		81-100%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Language Skills																			
. reading	5	36	5	36	3	21	1	7	-	-	-	-	-	-	-	-	-	-	14
. listening	6	43	7	50	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14
. language study (analysis of grammar, linguistics, etc.)	3	21	10	72	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14
. formal and informal speaking	3	21	8	58	3	21	-	-	-	-	-	-	-	-	-	-	-	-	14
. writing	2	14	4	29	3	21	3	21	1	7	1	7	-	-	-	-	-	-	14
. other	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Media other than literature																			
. critical assessment of newspapers, magazines	10	71	4	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
. critical assessment of television and radio	10	71	4	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
. media production (videotapes, film, etc.)	9	64	5	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Literature	1	7	2	14	2	14	2	14	3	21	2	14	-	-	1	7	1	7	14

TABLE 4.21

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N		%	
A variety of approaches (more than 2)	4	31		
By form and style	1	8		
By genre (novel, play, etc.)	3	23		
By ideas and concepts	-	-		
By modes (e.g., comedy, tragedy, satire)	-	-		
Thematic (e.g., women in literature)	3	23		
By culture or country	2	15		
Historical	-	-		
Other	-	-		
Total	13	100		

TABLE 4.22

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH GENRE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	
Essays	4	31	5	39	2	15	2	15	-	-	-	-	13
Novels	1	8	1	8	-	-	8	61	3	23	-	-	13
Plays	-	-	1	8	5	39	5	39	2	15	-	-	13
Poems	1	8	7	54	4	31	-	-	1	8	-	-	13
Short stories	1	8	4	31	5	38	2	15	1	8	-	-	13
Other	12	92	1	8	-	-	-	-	-	-	-	-	13

TABLE 4.23

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO PRE-TWENTIETH CENTURY
AND TWENTIETH CENTURY LITERATURE"

ITEM	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	
Pre-twentieth century	1	8	4	31	1	8	4	31	-	-	3	23	13
1900-1940	1	8	4	31	3	23	3	23	2	15	-	-	13
1940-present	1	8	1	8	3	23	3	23	-	-	5	38	13

TABLE 4.24

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF TIME IN THE LITERATURE
SEGMENT OF YOUR COURSE YOU GIVE TO EACH ORIGIN"

	0%		1-10%		11-20%		21-40%		41-50%		51+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	
Canadian other than French	4	31	2	15	1	8	3	23	1	8	2	15	13
French-Canadian in translation	10	77	3	23	-	-	-	-	-	-	-	-	13
American	1	8	2	15	4	31	5	38	-	-	1	8	13
British	2	15	2	15	-	-	2	15	2	15	5	38	13
Other English speaking	9	69	2	15	1	8	-	-	1	8	-	-	13
Other countries in translation	7	54	5	38	-	-	1	8	-	-	-	-	13

TABLE 4.25

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS ^b %		
		ENTRY MEAN ^a	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN			
<u>Language Skills</u>										
In reading:										
• comprehend the meaning of a passage	86	1.9	.5	2.8	.5	3.0	.6	3.5	.5	79
• distinguish between essential and non-essential information.	79	1.6	.7	2.6	.5	2.8	.7	3.5	.5	79
• apply flexibility in the speed of reading appropriate to content and purpose.	71	1.2	.8	2.1	.7	2.5	.7	3.4	.5	86
• apply inferential skills	64	1.4	.9	2.2	.8	2.6	.7	3.3	.7	86
In writing:										
• write an effective summary of materials read	93	1.9	.9	2.9	.7	2.8	.7	3.6	.5	64
• demonstrate facility in writing in terms of planning, organization, presentation and editing:										
a) expository writing	79	1.7	.6	2.5	.8	2.7	.5	3.7	.5	79
b) persuasive or argumentative essay	86	1.5	.6	2.5	.8	2.5	.7	3.5	.7	93
c) business letter	36	1.2	.8	2.2	.8	2.2	.8	3.0	.7	36
d) personal letter	21	2.2	.4	2.8	.4	2.4	.4	3.6	.5	21
e) report	71	1.6	.5	2.6	.5	2.7	.5	3.7	.5	64
f) summary	86	1.6	.2	2.9	.3	2.8	.6	3.6	.5	57

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 7 indicating Mastery, Competence in High Level, Creative Situations. See English questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 4.25 (Cont'd)

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SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	EXIT	ENTRY	S.D.	MEAN		
. demonstrate facility in imaginative, creative writing:									
a) prose	71	1.6	.7	2.8	.6	2.6	.5	3.6	.5
b) poetry	50	1.0	.7	1.8	.6	2.2	.4	3.0	.6
. apply appropriate structure, grammar, and conventions of written English	71	1.7	.6	2.5	.5	2.6	.5	3.6	.5
. use correct spelling	79	1.6	.6	2.6	.5	2.8	.6	3.8	.4
. demonstrate effective organization in the writing of a paragraph	64	1.9	.7	2.8	.6	2.8	.6	3.6	.5
. present an argument effectively	64	1.9	.7	2.4	.5	2.6	.5	3.5	.5
. use effective note-taking techniques	64	1.5	.9	2.3	.8	2.3	.7	3.3	.8
In speaking:									
. present an oral summary of a speech, story or report	86	2.0	.6	3.0	.7	2.5	.5	3.6	.5
. speak in a style appropriate to subject matter and audience	71	1.8	1.0	2.6	.9	2.6	.7	3.3	.5
. present the following effectively:									
a) an argument, formal debate	64	1.1	.7	2.2	.4	2.3	.5	3.5	.5
b) a story to amuse or entertain	64	1.6	.5	2.6	.7	2.1	.4	3.3	.5

TABLE 4.25 (Cont'd)

SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
c) a formal speech (e.g., in public speaking)	50	1.4	.5	2.4	.9	3.0	.6	3.3	.5	36
• contribute effectively in a small group discussion	71	2.0	.4	2.8	.4	2.8	.6	3.5	.5	64
• use language appropriately in a variety of social contexts	57	1.6	.8	2.4	.7	2.5	.7	3.1	.7	57
Language Study										
• analyze language in terms of grammar	64	1.0	.6	2.6	.8	2.5	.7	3.3	.6	64
• apply appropriate terminology in analysis of language	64	.8	.8	2.0	.9	2.2	.9	2.9	1.0	64
• analyze problems arising from French and English language differences (idioms, imagery, etc.)	64	1.4	.8	2.5	.7	2.7	.7	3.5	.5	64
Media Other Than Literature										
• critically assess	50	1.8	1.0	2.9	.8	2.5	.8	3.3	.5	21
a) a film	43	1.5	.5	2.9	.8	2.2	.4	3.0	.7	21
b) magazines	43	1.6	.5	2.7	.8	2.2	.4	3.2	.4	21
c) newspapers	29	2.0	1.2	3.2	.8	2.8	1.0	3.3	1.0	14
d) television/radio	43	1.6	.5	2.7	.9	2.7	.7	3.3	.9	43
e) drama										

TABLE 4.25 (Cont'd)

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SECONDARY SCHOOL ANGLAIS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	
. critically assess advertising in terms of:								
a) language used	29	.8	.5	2.0	.8	2.0	1.0	3.0 1.0 21
b) design and presentation (oral and/or written)	21	1.0	.8	2.0	.8	2.0	1.0	3.0 1.0 21
. critically assess the language of politics (e.g., political speeches, editorials) in terms of:								
a) language used	21	1.0	.9	1.8	.6	2.0	1.0	3.0 .7 29
b) design and presentation	29	.8	.8	1.8	.8	1.8	.8	3.0 .7 36
. contribute to the presentation of:								
a) a film	29	.8	1.0	2.5	1.3	2.0	1.0	3.0 1.0 21
b) a videotape or radio presentation	36	.8	.9	2.6	1.1	2.0	.8	3.3 1.0 29
c) a play	64	1.7	1.1	2.9	.9	2.6	.9	3.2 .7 43
d) an oral interview	64	1.4	.5	2.8	.7	2.4	.7	3.3 .7 43
Literature								
. apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work.	79	1.4	.6	2.4	.8	2.5	.7	3.6 .7 93
. analyze literary forms in terms of:								
a) stylistic techniques (e.g., plot, style, characterization)	79	1.5	.9	2.6	.9	2.5	.8	3.5 .7 86
b) connotation (e.g., word, image, sound)	64	1.1	1.0	2.1	1.0	2.4	1.0	3.2 .9 93

TABLE 5.1
SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS																TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+			
Enseignement au niveau secondaire	0	1	0	1	1	1	5	1	1	1	0	0	0	2	14		
Enseignement ce cours (ou son équivalent)	0	3	3	2	1	1	1	3	0	0	0	0	0	0	14		

TABLE 5.2
SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 4 GENERAL	
	N	%
Non	5	36
Elémentaire	5	36
Collégial	1	7
Universitaire	1	7
Autre niveau	0	0
Plus d'un niveau	2	14
Total	14	100

TABLE 5.3

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS															TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+		
Enseignement au niveau secondaire	0	0	0	0	2	1	2	0	1	1	0	5	0	1	13	
Enseignement ce cours (ou son équivalent)	0	2	1	2	2	1	0	1	2	0	0	2	0	0	13	

TABLE 5.4

SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 4 AVANCE	
	N	%
Non	8	62
Elémentaire	3	23
Collégial	0	0
Universitaire	0	0
Autre niveau	0	0
Plus d'un niveau	2	15
Total	13	100

TABLE 5.5
SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS														TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	
Enseignement au niveau secondaire	0	0	0	1	2	0	1	1	1	0	0	5	1	1	13
Enseignement ce cours (ou son équivalent)	0	2	5	2	1	0	1	1	0	1	0	0	0	0	13

TABLE 5.6
SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 5	
	N	%
Non	8	62
Elémentaire	2	15
Collégial	0	0
Universitaire	1	8
Autre niveau	0	0
Plus d'un niveau	2	15
Total	13	100

TABLE 5.7
SECONDARY SCHOOL FRANCAIS
DIPLOMES LES PLUS ELEVES DES PROFESSEURS

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Doctorat	0	0	0	0	0	0
Maîtrise	4	29	3	23	2	15
Baccalauréat spécialisé	3	21	8	62	10	77
Baccalauréat général	7	50	2	15	1	8
Certificat post-secondaire	0	0	0	0	0	0
Autre diplôme	0	0	0	0	0	0
Total	14	100	13	100	13	100

TABLE 5.8
SECONDARY SCHOOL FRANCAIS
CATEGORIE DE L'OSSTF OU DE L'AEFO

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Catégorie 1/A1	0	0	0	0	0	0
Catégorie 2/A2	6	43	1	8	0	0
Catégorie 3/A3	1	7	0	0	0	0
Catégorie 4/A4	7	50	12	92	13	100
Total	14	100	13	100	13	100

TABLE 5.9
SECONDARY SCHOOL FRANCAIS
LE POSTE DU PROFESSEUR DANS L'ECOLE

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Directeur	0	0	0	0	0	0
Directeur adjoint	0	0	0	0	1	8
Chef de département	3	22	4	31	6	46
Chef adjoint	2	14	6	46	2	15
Professeur	9	64	3	23	4	31
Autre poste	0	0	0	0	0	0
Total	14	100	13	100	13	100

TABLE 5.10
SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"CE COURS A-T-IL UN LIEN QUELCONQUE AVEC
VOTRE DOMAINE DE SPECIALISATION?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui, il s'inscrit dans mon domaine de spécialisation	11	79	12	92	12	92
Oui, il s'y rattache indirectement	2	14	1	8	1	8
Non	1	7	0	0	0	0
Total	14	100	13	100	13	100

TABLE 5.11

SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Intérêt des étudiants	9	64	4	29	1	7	-	-	-	-	14
Connaissance du sujet par les étudiants	4	29	6	43	1	7	3	21	-	-	14
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	-	-	5	36	7	50	-	-	2	14	14
Renseignements dont vous disposez sur les choix de programmes, de cours, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	5	36	3	21	3	21	2	14	1	7	14
Programme-cadre du Ministère de l'éducation de l'Ontario	2	14	6	43	2	14	4	29	-	-	14
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	3	21	4	29	1	7	4	29	2	14	14
Votre propre intérêt pour la matière et/ou votre formation	11	79	3	21	-	-	-	-	-	-	14
Contenu et orientation du (des) manuel(s) de base	4	29	4	29	3	21	3	21	-	-	14

TABLE 5.12

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP			MODERE-			UN PEU			PAS DU			ITEM NON			TOTAL
	N	%		N	%		N	%		N	%		N	%		
Intérêt des étudiants.	9	69	4	31	-	-	-	-	-	-	-	-	-	-	-	13
Connaissance du sujet par les étudiants.	9	69	3	23	1	8	-	-	-	-	-	-	-	-	-	13
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants.	1	8	4	31	5	38	3	23	-	-	-	-	-	-	-	13
Renseignements dont vous disposez sur les choix de programmes, de cours, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours.	5	38	3	23	4	31	1	8	-	-	-	-	-	-	-	13
Programme-cadre du Ministère de l'éducation de l'Ontario.	2	15	7	54	3	23	1	8	-	-	-	-	-	-	-	13
Directives qui vous ont été données. (e.g. par le directeur de programme, le comité de planification académique).	1	8	7	54	2	15	2	15	1	8	-	-	-	-	-	13
Votre propre intérêt pour la matière et/ou votre formation.	8	61	4	31	1	8	-	-	-	-	-	-	-	-	-	13
Contenu et orientation du (des) manuel(s) de base.	6	46	5	38	1	8	-	-	-	-	-	-	1	8	-	13

TABLE 5.13

SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP			MODERE-			UN PEU			PAS DU			ITEM NON			TOTAL
	N	%		N	%		N	%		N	%		N	%		
Intérêt des étudiants.	7	54	5	38	1	8	-	-	-	-	-	-	-	-	-	13
Connaissance du sujet par les étudiants.	6	47	3	23	2	15	2	15	2	15	-	-	-	-	-	13
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants.	2	15	2	15	7	54	2	15	2	15	-	-	-	-	-	13
Renseignements dont vous disposez sur les choix de programmes, de cours, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours.	4	31	2	15	1	8	6	46	-	-	-	-	-	-	-	13
Programme-cadre du Ministère de l'éducation de l'Ontario.	2	15	2	15	8	62	1	8	-	-	-	-	-	-	-	13
Directives qui vous ont été données. (e.g. par le directeur de programme, le comité de planification académique).	2	15	1	8	2	15	6	47	2	15	-	-	-	-	-	13
Votre propre intérêt pour la matière et/ou votre formation.	10	77	1	8	2	15	-	-	-	-	-	-	-	-	-	13
Contenu et orientation du (des) manuel(s) de base.	4	31	2	15	2	15	4	31	1	8	-	-	-	-	-	13

TABLE 5.14

SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EXISTE-T-IL DES COURS PRE-REQUIS
(RECOMMANDES AU NIVEAU SECONDAIRE)?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui	9	64	9	69	9	69
Non	5	36	4	31	4	31
Total	14	100	13	100	13	100

TABLE 5.15

SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"D'APRES VOUS, EST-CE QUE LES ETUDIANTS ETAIENT BIEN PREPARES
A SUIVRE VOTRE COURS?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui, très bien	-	-	-	-	1	8
Oui, assez bien	5	38	6	46	3	23
Oui, bien	4	31	5	39	6	46
Non, pas suffisamment	4	31	2	15	3	23
Total	13	100	13	100	13	100

TABLE 5.16

SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"QUELLE EST L'IMPORTANCE DE L'ECART QUI DIFFERENCIE LES ETUDIANTS
AU DEBUT DE VOTRE COURS?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Ecart important	3	21	4	31	6	46
Ecart acceptable	6	43	8	61	5	39
Ecart négligeable	3	21	1	8	2	15
Impossible d'en juger	2	15	-	-	-	-
Total	14	100	13	100	13	100

TABLE 5.17

SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"A QUEL POINT EST-CE-QUE CE COURS PERMET AUX ETUDIANTS
DE FAIRE DU PROGRES A UN RYTHME INDIVIDUEL?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Beaucoup	-	-	1	8	-	-
Modérément	-	-	-	-	1	8
Un peu	2	14	1	8	5	38
Pas du tout	12	86	11	84	7	54
Total	14	100	13	100	13	100

SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

[illegible]

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

[illegible]

TABLE 5.19

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Cours magistral (suivi ou non d'une discussion)	-	-	5	38	3	23	4	31	1	8	-	-	-	-	-	-	13
"Maïeutique" (méthode suscitant la réflexion au moyen de questions appropriées)	-	-	2	15	8	61	1	8	1	8	1	8	-	-	-	-	13
Travail en petits groupes (sous la surveillance du professeur)	-	-	10	77	3	23	-	-	-	-	-	-	-	-	-	-	13
Séminaire (travail d'un seul groupe dirigé ou non par un professeur; cette technique peut comprendre des exposés d'étudiants)	4	30	8	62	1	8	-	-	-	-	-	-	-	-	-	-	13
Travail individuel (les étudiants font en classe le travail requis pour le cours et reçoivent, au besoin, une aide supplémentaire du professeur; vous pouvez inclure ici le travail à la bibliothèque ou au centre de documentation).	1	8	9	69	3	23	-	-	-	-	-	-	-	-	-	-	13
Enseignement individualisé (chaque étudiant travaille à son propre rythme; par exemple, enseignement programmé, modules d'apprentissage)	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Jeux, simulations	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Travail de laboratoire	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13

TABLE 5.20

SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Cours magistral (suivi ou non d'une discussion)	-	-	6	46	1	8	3	23	2	15	-	-	1	8	-	-	13
"Maïeutique" (méthode suscitant la réflexion au moyen de questions appropriées)	-	-	6	46	4	31	2	15	1	8	-	-	-	-	-	-	13
Travail en petits groupes (sous la surveillance du professeur)	4	31	6	46	2	15	1	8	-	-	-	-	-	-	-	-	13
Séminaire (travail d'un seul groupe dirigé ou non par un professeur; cette technique peut comprendre des exposés d'étudiants)	3	23	7	54	2	15	-	-	1	8	-	-	-	-	-	-	13
Travail individuel (les étudiants font en classe le travail requis pour le cours et reçoivent, au besoin, une aide supplémentaire du professeur; vous pouvez inclure ici le travail à la bibliothèque ou au centre de documentation).	-	-	8	61	4	31	-	-	-	-	1	8	-	-	-	-	13
Enseignement individualisé (chaque étudiant travaille à son propre rythme; par exemple, enseignement programmé, modules d'apprentissage)	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Jeux, simulations	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Travail de laboratoire	13	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13

TABLE 5.21
SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DANS VOTRE COURS, LES ETUDIANTS UTILISENT-ILS
LE MATERIEL DECRIT CI-APRES?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Manuel de base	6	43	5	36	1	7	1	7	1	7	14
Manuel de base et manuel(s) supplément- aire(s)	3	22	8	57	1	7	1	7	1	7	14
Deux manuels de base ou plus de deux, ou des extraits d'autres manuels	2	14	5	36	2	14	4	29	1	7	14
Sources secondaires (livres de référence, dictionnaires, encyclopédies, etc.)	3	21	7	50	4	29	-	-	-	-	14
Publications et revues savantes	-	-	1	7	6	43	7	50	-	-	14
Ensembles d'enseignement individualisé (séries programmées, modules d'appren- tissage)	1	7	-	-	1	7	12	86	-	-	14
Autre matériel de classe (journaux, revues, brochures, etc.)	4	29	1	7	5	35	4	29	-	-	14
Matériel audio-visuel (télévision, cinéma, magnétophone, etc.)	-	-	4	29	7	50	3	21	-	-	14
Matériel de laboratoire	-	-	-	-	1	7	13	93	-	-	14

TABLE 5.22

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DANS VOTRE COURS, LES ETUDIANTS UTILISENT-ILS
LE MATERIEL DECRIT CI-APRES?"

	BEAUCOUP			MODERE-			UN PEU			PAS DU			TOTAL		
	N	%		N	%	MENT	N	%		N	%	TOUT	N	%	
Manuel de base	7	54		1	8		2	15		2	15		1	8	13
Manuel de base et manuel(s) supplément- aire(s)	4	31		2	15		4	31		1	8		2	15	13
Deux manuels de base ou plus de deux, ou des extraits d'autres manuels	6	47		2	15		2	15		1	8		2	15	13
Sources secondaires (livres de référence, dictionnaires, encyclopédies, etc.)	5	39		6	46		2	15		-	-		-	-	13
Publications et revues savantes	-	-		2	15		7	54		3	23		1	8	13
Ensembles d'enseignement individualisé (séries programmées, modules d'appren- tissage)	1	8		-	-		-	-		11	84		1	8	13
Autre matériel de classe (journaux, revues, brochures, etc.)	-	-		2	15		9	70		2	15		-	-	13
Matériel audio-visuel (télévision, cinéma, magnétophone, etc.)	-	-		5	38		7	54		1	8		-	-	13
Matériel de laboratoire	-	-		-	-		-	-		12	92		1	8	13

TABLE 5.23

SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DANS VOTRE COURS, LES ETUDIANTS UTILISENT-ILS
LE MATERIEL DECRIT CI-APRES?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Manuel de base	6	46	1	8	-	-	4	31	2	15	13
Manuel de base et manuel(s) supplément- aire(s)	4	31	2	15	4	31	2	15	1	8	13
Deux manuels de base ou plus de deux, ou des extraits d'autres manuels	5	38	1	8	1	8	5	38	1	8	13
Sources secondaires (livres de référence, dictionnaires, encyclopédies, etc.)	8	61	3	23	1	8	1	8	-	-	13
Publications et revues savantes	2	15	1	8	5	39	3	23	2	15	13
Ensembles d'enseignement individualisé (séries programmées, modules d'appren- tissage)	-	-	-	-	3	23	8	62	2	15	13
Autre matériel de classe (journaux, revues, brochures, etc.)	2	15	2	15	7	54	1	8	1	8	13
Matériel audio-visuel (télévision, cinéma, magnétophone, etc.)	1	8	3	23	5	39	2	15	2	15	13
Matériel de laboratoire	-	-	-	-	1	8	7	54	5	38	13

TABLE 5.24

SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"COMBIEN DE TEMPS DEVEZ-VOUS CONSACRER A LA REVISION
DE LA MATIERE QUI EST Censee ETRE ASSIMILEE AVANT VOTRE COURS?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
0%	-	-	-	-	-	-
1-10%	7	50	6	46	8	61
11-20%	2	14	4	30	-	-
21-30%	2	14	1	8	3	23
31-40%	1	8	1	8	-	-
41-50%	2	14	1	8	1	8
51-75%	-	-	-	-	-	-
76+%	-	-	-	-	1	8
Total	14	100	13	100	13	100

TABLE 5.25

SECONDARY SCHOOL FRANCAIS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"A COMBIEN ESTIMEZ-VOUS LE NOMBRE D'HEURES QUE VOS ETUDIANTS
CONSACRENT A VOTRE COURS EN DEHORS DES HEURES DE CLASSE?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
0%*	-	-	2	15	-	-
1-25%	7	50	2	15	1	8
26-50%	5	36	6	47	6	46
51-75%	-	-	1	8	1	8
76-100%	2	14	2	15	4	30
101-150%	-	-	-	-	1	8
151-200%	-	-	-	-	-	-
201%+	-	-	-	-	-	-
Total	14	100	13	100	13	100

*La base pour ce pourcentage était les heures accordées au travail en classe. Par exemple, pour deux heures de travail hors de la classe, en rapport avec une heure en classe, le chiffre sera 200.

TABLE 5.26

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"LES ETUDIANTS PEUVENT-ILS ETRE DISPENSES DE L'EXAMEN FINAL
SELON LES RESULTATS OBTENUS EN COURS D'ANNEE?"

	L'AN 4 GENERAL		L'AN 4 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui	5	36	4	31	5	38
Non	4	28	5	38	4	31
Le cours ne comporte pas d'examen final	5	36	4	31	4	31
Total	14	100	13	100	13	100

TABLE 5.27

SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Examens semestriels	8	57	-	-	3	22	1	7	1	7	1	7	-	-	-	-	14
Autres tests écrits	2	14	3	22	4	29	1	7	2	14	2	14	-	-	-	-	14
Autres tests oraux	7	50	4	29	3	21	-	-	-	-	-	-	-	-	-	-	14
Travaux écrits individuels (dissertations, rapports, compte rendus, etc.)	2	14	2	14	7	50	3	22	-	-	-	-	-	-	-	-	14
Travaux écrits de groupe ou d'équipe	8	57	4	29	2	14	-	-	-	-	-	-	-	-	-	-	14
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	7	50	5	36	1	7	1	7	-	-	-	-	-	-	-	-	14
Projets de groupe ou d'équipe	7	50	5	36	1	7	1	7	-	-	-	-	-	-	-	-	14
Exercices	3	21	6	43	4	29	1	7	-	-	-	-	-	-	-	-	14
Cahiers	12	86	1	7	1	7	-	-	-	-	-	-	-	-	-	-	14
Participation en classe et/ou au laboratoire	7	50	5	36	2	14	-	-	-	-	-	-	-	-	-	-	14
Efforts	9	64	4	29	1	7	-	-	-	-	-	-	-	-	-	-	14
Présence	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14
Exposés individuels (discours préparés ou spontanés)	4	29	8	57	2	14	-	-	-	-	-	-	-	-	-	-	14
Présentations théâtrales en groupe	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14
Autres activités (précisez en ajoutant de cases au besoin)	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14

*Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédé d'arriver à la note finale.

TABLE 5.28

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		75+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	13	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Examens semestriels	5	38	-	-	1	8	4	31	3	23	-	-	-	-	-	-	13
Autres tests écrits	-	-	-	-	6	46	5	39	2	15	-	-	-	-	-	-	13
Autres tests oraux	8	61	4	31	1	8	-	-	-	-	-	-	-	-	-	-	13
Travaux écrits individuels (dissertations, rapports, compte rendus, etc.)	-	-	1	8	5	38	6	46	-	1	8	-	-	-	-	-	13
Travaux écrits de groupe ou d'équipe	6	46	6	46	1	8	-	-	-	-	-	-	-	-	-	-	13
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	7	54	6	46	-	-	-	-	-	-	-	-	-	-	-	-	13
Projets de groupe ou d'équipe	7	54	5	38	1	8	-	-	-	-	-	-	-	-	-	-	13
Exercices	6	46	5	39	2	15	-	-	-	-	-	-	-	-	-	-	13
Cahiers	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Participation en classe et/ou au laboratoire	5	38	6	46	1	8	1	8	-	-	-	-	-	-	-	-	13
Efforts	7	54	6	46	-	-	-	-	-	-	-	-	-	-	-	-	13
Présence	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Exposés individuels (discours préparés ou spontanés)	2	15	7	54	4	31	-	-	-	-	-	-	-	-	-	-	13
Présentations théâtrales en groupe	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13

*Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 5.29

SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	9	69	-	-	2	15	1	8	1	8	-	-	-	-	-	-	13
Examens semestriels	5	39	-	-	2	15	1	8	2	15	3	23	-	-	-	-	13
Autres tests écrits	-	-	2	15	6	47	2	15	3	23	-	-	-	-	-	-	13
Autres tests oraux	8	61	4	31	1	8	-	-	-	-	-	-	-	-	-	-	13
Travaux écrits individuels (dissertations, rapports, compte rendus, etc.)	-	-	2	15	6	47	2	15	1	8	2	15	-	-	-	-	13
Travaux écrits de groupe ou d'équipe	9	69	3	23	1	8	-	-	-	-	-	-	-	-	-	-	13
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	7	54	6	46	-	-	-	-	-	-	-	-	-	-	-	-	13
Projets de groupe ou d'équipe	10	77	2	15	1	8	-	-	-	-	-	-	-	-	-	-	13
Exercices	8	61	4	31	1	8	-	-	-	-	-	-	-	-	-	-	13
Cahiers	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Participation en classe et/ou au laboratoire	6	46	6	46	1	8	-	-	-	-	-	-	-	-	-	-	13
Efforts	9	69	4	31	-	-	-	-	-	-	-	-	-	-	-	-	13
Présence	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Exposés individuels (discours préparés ou spontanés)	5	38	7	54	-	-	-	-	-	-	1	8	-	-	-	-	13
Présentations théâtrales en groupe	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13

* Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 5.30
SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AFFECTEZ LES ITEMS DU CODE PROPOSE SELON L'IMPORTANCE
QUE VOUS LEUR ACCORDEZ"

OBJECTIFS	IMPORTANCE CONSIDERABLE		IMPORTANCE MOYENNE		TRES PEU D'IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Linguistique:											
Acquisition des principes fondamentaux de la science linguistique	-	-	-	-	8	57	6	43	-	-	14
Eveil de la conscience linguistique	-	-	1	7	7	50	6	43	-	-	14
Connaissance des mécanismes de la langue	2	14	2	14	5	36	5	36	-	-	14
Langue:											
Savoir parler	12	86	1	7	1	7	-	-	-	-	14
Savoir écouter	8	57	5	36	1	7	-	-	-	-	14
Savoir lire	10	71	4	29	-	-	-	-	-	-	14
Savoir écrire	12	86	2	14	-	-	-	-	-	-	14
Littérature:											
Analyse du fonctionnement des mécanismes linguistiques propres au texte littéraire	-	-	5	36	5	36	4	28	-	-	14
Analyse des arrangements artistiques du texte littéraire	1	7	6	43	4	29	3	21	-	-	14
Analyse du contenu culturel du texte littéraire	4	29	6	43	2	14	2	14	-	-	14
Formation du goût littéraire	3	22	8	57	1	7	2	14	-	-	14

TABLE 5.31

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AFFECTEZ LES ITEMS DU CODE PROPOSE SELON L'IMPORTANCE
QUE VOUS LEUR ACCORDEZ"

OBJECTIFS	IMPORTANCE CONSIDÉRABLE		IMPORTANCE MOYENNE		D'IMPORTANCE		TRES PEU IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	
Linguistique:													
Acquisition des principes fondamentaux de la science linguistique	-	-	2	15	5	39	6	46	-	-	-	-	13
Eveil de la conscience linguistique	-	-	5	38	5	38	3	24	-	-	-	-	13
Connaissance des mécanismes de la langue	1	8	5	38	6	46	1	8	-	-	-	-	13
Langue:													
Savoir parler	10	77	3	23	-	-	-	-	-	-	-	-	13
Savoir écouter	4	31	7	54	2	15	-	-	-	-	-	-	13
Savoir lire	9	69	3	23	1	8	-	-	-	-	-	-	13
Savoir écrire	12	92	1	8	-	-	-	-	-	-	-	-	13
Littérature:													
Analyse du fonctionnement des mécanismes linguistiques propres au texte litté- raire	2	16	5	38	5	38	1	8	-	-	-	-	13
Analyse des arrangements artistiques du texte littéraire	3	23	8	61	1	8	1	8	-	-	-	-	13
Analyse du contenu culturel du texte littéraire	4	31	8	61	-	-	1	8	-	-	-	-	13
Formation du goût littéraire	7	54	6	46	-	-	-	-	-	-	-	-	13

TABLE 5.32
SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AFFECTEZ LES ITEMS DU CODE PROPOSE SELON L'IMPORTANCE
QUE VOUS LEUR ACCORDEZ"

OBJECTIFS	IMPORTANCE CONSIDÉRABLE		IMPORTANCE MOYENNE		TRES PEU D'IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Linguistique:											
Acquisition des principes fondamentaux de la science linguistique	1	8	3	23	2	15	7	54	-	-	13
Eveil de la conscience linguistique	1	8	5	38	-	-	7	54	-	-	13
Connaissance des mécanismes de la langue	3	23	4	31	2	15	4	31	-	-	13
Langue:											
Savoir parler	6	46	6	46	1	8	-	-	-	-	13
Savoir écouter	4	31	4	31	5	38	-	-	-	-	13
Savoir lire	5	38	4	31	4	31	-	-	-	-	13
Savoir écrire	10	77	2	15	1	8	-	-	-	-	13
Littérature:											
Analyse du fonctionnement des mécanismes linguistiques propres au texte littéraire	4	31	6	46	2	15	1	8	-	-	13
Analyse des arrangements artistiques du texte littéraire	2	15	7	54	2	15	1	8	1	8	13
Analyse du contenu culturel du texte littéraire	4	31	4	31	3	22	1	8	1	8	13
Formation du goût littéraire	4	31	5	38	2	15	1	8	1	8	13

TABLE 5.33

SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A \bar{x} ^a	L'ENTREE s	A LA SORTIE \bar{x} s	A L'ENTREE \bar{x} s	A LA SORTIE \bar{x} s		
Langue:								
Etude des éléments fondamentaux de la langue:								
.orthographe	86	.6	.5	1.9 1.0	1.9 1.7	3.1 1.2		71
.vocabulaire	64	1.0	.7	1.9 1.1	2.1 1.6	3.2 1.5		57
.grammaire	64	.6	.5	1.6 1.4	1.6 1.6	2.7 1.3		64
.stylistique (structures de phrases, phraséologie etc.)	71	.5	.5	1.6 1.4	2.0 1.7	3.0 1.3		86
Travaux écrits:								
.compréhension du sujet	64	1.2	.8	2.3 .9	2.1 1.3	3.2 1.3		50
.organisation	71	.9	.9	2.0 1.1	1.9 1.4	3.1 1.5		57
.rédaction	86	.4	.6	1.9 1.4	1.9 1.8	2.9 1.3		93
.analyse et commentaire de textes	71	.4	.5	1.5 1.3	1.5 1.4	2.4 1.6		64
Expression orale:								
.prononciation	64	1.1	.9	2.0 1.4	2.0 1.2	2.9 1.5		50
.lecture expressive	64	1.0	.6	2.2 1.0	2.1 1.2	3.3 1.4		57
.expression spontanée	79	1.1	.9	2.1 1.1	1.9 1.2	3.0 1.3		64
.exposés	64	.9	.9	1.7 1.1	1.9 1.3	3.0 1.0		64

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de zéro (niveau inacceptable) à 7 (niveau idéal). Voyez le questionnaire de français, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 5.33 (Cont'd)
 SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
 TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
 "NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT	
		A L'ENTREE X	S	A LA SORTIE X	S	A L'ENTREE X	S	A LA SORTIE X	S	DE LA PREPARATION	%
Linguistique:											
Principes généraux	29	.1	.3	.4	.6	.6	.8	.9	1.2		43
Domaines:											
.phonétique	21	.3	.5	1.5	1.0	.8	.8	1.6	1.1		21
.phonologie	21	.2	.4	1.0	.8	.8	.8	1.6	1.1		21
.morphologie	36	.3	.5	1.4	1.1	.9	1.4	2.1	1.1		36
.syntaxe	36	.9	.7	1.6	1.6	1.9	2.1	2.7	1.6		36
.sémantique	29	.7	.8	1.8	1.9	2.4	2.6	2.5	1.4		36
.lexicologie	29	1.0	.7	2.2	1.7	2.1	2.4	2.8	1.5		29
Littérature:											
Etude de textes:											
.poèmes	43	.6	.5	1.6	1.1	1.6	.7	2.6	1.3		50
.romans	71	1.2	1.0	2.3	1.1	1.8	.9	3.3	1.3		50
.théâtre	79	1.3	1.0	2.3	.9	1.3	.9	3.2	1.3		86
.essais	21	.5	.5	1.0	.9	1.0	.6	1.8	1.0		21
Explication de textes:											
.orale	50	.8	.4	1.5	.5	1.5	.5	2.4	.8		50
.écrite	50	.8	.4	1.5	.7	1.6	.7	2.6	.7		43

TABLE 5.33 (Cont'd)

SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL

TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS

"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION		
		A L'ENTREE		A LA SORTIE		A L'ENTREE		A LA SORTIE		X	S	
		X	S	X	S	X	S	X	S			
Composition:												
.analyse littéraire	21	.3	.5	.7	1.2	1.0	.8	1.8	1.3			21
.commentaire de textes	29	.7	.5	1.3	.8	1.3	.8	2.0	1.0			29
.dissertations	29	.1	.4	.9	.9	.7	.5	1.7	1.3			29
.rédactions diverses	71	.8	.5	2.0	1.0	1.4	.7	2.8	1.1			50
Culture:												
Connaissance de l'héritage littéraire et culturel:												
.poèmes	29	.6	.5	1.4	1.3	1.4	.9	2.1	1.5			29
.romans	57	.8	.4	1.9	.9	1.4	.7	2.4	1.2			36
.contes	57	.7	.7	1.9	1.5	1.8	1.5	2.4	1.7			50
.théâtre	64	.7	.5	2.1	1.0	1.6	.8	2.8	1.2			43
.films	50	.8	.5	1.6	.7	1.5	.5	2.5	.8			36
.chansons	50	.6	.5	1.7	1.3	1.8	.9	3.0	1.5			57

TABLE 5.34

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION ^b %
		A \bar{X} ^a	L'ENTREE s	A LA SORTIE \bar{X} s	A \bar{X}	L'ENTREE s	A LA SORTIE \bar{X} s	
Langue:								
Etude des éléments fondamentaux de la langue:								
.orthographe	92	.8	.6	2.5 .9	2.5	.9	4.0 1.0	100
.vocabulaire	85	1.0	.6	2.2 1.0	2.6	.7	4.0 1.0	92
.grammaire	92	.8	.7	2.2 1.0	2.7	.8	4.1 1.0	100
.stylistique (structures de phrases, phraséologie etc.)	92	.9	.3	2.5 .9	2.4	.7	3.9 1.0	92
Travaux écrits:								
.compréhension du sujet	92	1.3	.5	2.5 .8	2.6	.7	4.1 .9	92
.organisation	100	.8	.8	2.5 .9	2.3	.8	3.8 .9	100
.rédaction	100	1.1	.5	2.5 .5	2.5	.7	4.0 .9	92
.analyse et commentaire de textes	85	.8	.8	2.4 .9	2.3	.8	3.8 1.1	100
Expression orale:								
.prononciation	77	1.0	.6	2.3 .8	2.5	.8	3.7 1.0	85
.lecture expressive	77	.9	.5	2.3 1.0	2.4	.9	3.7 1.3	69
.expression spontanée	77	1.2	.7	2.5 1.2	2.4	.8	3.8 .9	85
.exposés	92	1.2	.8	2.5 .8	2.4	.8	3.8 .9	100

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de zéro (niveau inacceptable) à 7 (niveau idéal). Voyez le questionnaire de français, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 5.34 (Cont'd)

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE A LA SORTIE				MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A X	LA SORTIE S	A X	L'ENTREE S	A X	LA SORTIE S	
Linguistique:										
Principes généraux	62	.3	.5	1.9	.7	1.8	.9	3.0	1.1	62
Domaines:										
.phonétique	46	.6	.5	1.7	.5	2.2	.8	3.2	1.2	46
.phonologie	46	.5	.5	1.8	.8	2.2	.8	3.3	1.0	23
.morphologie	46	.9	.8	1.8	1.2	2.1	.8	3.0	1.2	62
.syntaxe	62	1.0	.5	2.4	.9	2.4	.7	3.5	1.0	62
.sémantique	62	.9	.6	2.3	1.0	2.3	.9	3.4	1.1	62
.lexicologie	46	.7	.5	2.0	.9	2.0	.9	3.0	1.1	38
Littérature:										
Etude de textes:										
.poèmes	85	.8	.6	2.0	1.1	2.0	.9	3.8	1.1	77
.romans	100	1.5	.8	3.2	1.0	2.5	.9	4.3	.9	62
.théâtre	85	1.3	.9	2.8	1.2	2.3	1.0	4.1	.9	54
.essais	54	.3	.5	1.4	1.7	1.7	.9	3.3	1.5	54
Explication de textes:										
.orale	69	1.0	.7	1.8	1.5	2.5	1.0	4.1	1.1	69
.écrite	92	1.0	.6	2.5	1.2	2.6	.9	4.3	.9	92

TABLE 5.34 (Cont'd)
 SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
 TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
 "NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS		NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT	
	QUI	%	A L'ENTREE	A LA SORTIE	A L'ENTREE	A LA SORTIE	A L'ENTREE	A LA SORTIE	A L'ENTREE	A LA SORTIE	DE LA PREPARATION	%
Composition:												
.analyse littéraire	69		.5	.7	1.8	1.5	2.1	1.2	3.9	1.6		69
.commentaire de textes	85		.8	.6	2.1	1.2	2.1	1.0	3.9	1.0		77
.dissertations	100		.7	.8	2.6	1.2	2.1	1.1	3.9	1.2		92
.rédactions diverses	100		1.2	.6	2.8	.9	2.2	.8	4.0	1.0		77
Culture:												
Connaissance de l'héritage littéraire et culturel:												
.poèmes	46		.5	.7	1.0	1.2	2.1	1.0	3.6	1.3		54
.romans	69		.8	.8	1.8	1.4	2.3	.9	3.9	1.1		62
.contes	46		.6	1.0	1.2	1.2	2.4	.9	3.9	.8		54
.théâtre	62		.9	.7	1.5	1.3	2.2	.8	3.8	.8		62
.films	46		.5	.5	1.2	1.2	2.0	.8	3.6	1.1		54
.chansons	54		1.0	.5	1.5	1.1	2.1	.8	3.8	1.1		46

TABLE 5.35

SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS		NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION ^b
	QUI ENSEIGNENT	%	A L'ENTREE \bar{x}	s	A LA SORTIE \bar{x}	s	A L'ENTREE \bar{x}	s	DE LA SORTIE \bar{x}
Langue:									
Etude des éléments fondamentaux de la langue:									
.orthographe	85		1.0	.9	2.2	1.4	2.6	1.6	4.2 1.8
.vocabulaire	77		1.2	.6	2.5	1.1	2.7	1.1	4.2 1.5
.grammaire	85		.5	.7	2.0	1.4	2.0	1.2	3.8 1.9
.stylistique (structures de phrases, phraséologie etc.)	85		.9	.7	2.5	.9	2.4	1.3	4.2 1.5
Travaux écrits:									
.compréhension du sujet	77		1.4	.7	2.8	.8	3.0	.9	4.6 .9
.organisation	85		2.5	.7	2.7	.8	2.9	1.0	4.5 1.0
.rédaction	69		1.3	.8	2.5	1.4	2.9	1.2	4.3 1.6
.analyse et commentaire de textes	92		.8	.9	2.3	1.3	2.6	1.3	4.4 1.6
Expression orale:									
.pronociation	85		1.3	.8	2.6	.9	2.6	1.0	4.7 1.0
.lecture expressive	85		1.0	1.2	2.6	1.0	2.8	1.2	4.6 1.2
.expression spontanée	69		1.5	1.2	2.6	1.4	3.0	1.2	4.5 1.4
.exposés	85		1.5	1.1	3.1	1.0	2.8	1.1	4.8 1.4

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de zéro (niveau inacceptable) à 7 (niveau idéal). Voyez le questionnaire de français, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 5.35 (Cont'd)

SECONDARY SCHOOL FRANCAIS YEAR 5

TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS

"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJETIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION %
		A L'ENTREE \bar{X}	S	A LA SORTIE \bar{X}	S	A L'ENTREE \bar{X}	S	A LA SORTIE \bar{X}	S	
Linguistique:										
Principes généraux	38	.7	.5	2.7	1.8	2.0	1.3	4.3	1.6	31
Domaines:										
.phonétique	23	.8	.4	2.8	2.0	.6	.5	3.2	2.5	0
.phonologie	15	.3	.6	2.7	2.9	1.0	.0	4.3	2.3	15
.morphologie	38	.6	.5	2.6	1.9	2.0	1.0	4.2	1.6	31
.syntaxe	54	1.0	.6	3.0	1.6	2.3	1.3	4.6	1.4	38
.sémantique	46	1.0	.0	3.0	1.5	2.0	.9	4.2	1.5	31
.lexicologie	38	.6	.5	2.8	1.9	1.8	.8	4.6	1.5	31
Littérature:										
Etude de textes:										
.poèmes	77	1.3	.7	2.9	1.0	2.9	.9	4.6	1.3	77
.romans	69	1.7	.9	2.5	1.6	2.7	1.1	4.8	1.4	54
.théâtre	69	1.5	.8	2.3	1.5	2.6	1.1	4.5	1.6	62
.essais	62	1.3	.5	1.9	1.8	2.8	1.2	4.8	1.7	54
Explication de textes:										
.orale	77	1.4	.9	2.3	1.5	3.2	1.0	4.5	1.0	77
.écrite	100	1.4	.7	3.2	.9	3.1	1.0	4.8	.8	92

TABLE 5.35 (Cont'd)

SECONDARY SCHOOL FRANCAIS YEAR 5

TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS

"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A L'ENTREE			A LA SORTIE			A LA SORTIE		
		X	S	X	X	S	X	X	S	%
Composition:										
.analyse littéraire	92	1.1	.9	3.0	1.4	2.5	.8	4.3	.9	69
.commentaire de textes	77	1.4	1.0	2.5	1.6	2.6	.8	4.6	.8	62
.dissertations	69	1.4	1.1	2.3	1.7	2.9	.7	4.4	1.0	69
.rédactions diverses	85	1.6	1.0	2.8	1.4	2.9	.9	4.8	1.1	69
Culture:										
Connaissance de l'héritage littéraire et culturel:										
.poèmes	77	.9	.7	2.0	1.3	2.5	.7	4.4	1.3	69
.romans	77	1.1	.7	2.3	1.5	.7	.5	4.9	1.3	69
.contes	69	.7	.5	2.1	1.6	2.4	1.1	4.3	.8	69
.théâtre	77	1.0	.4	2.2	1.2	2.1	.8	4.1	1.5	62
.films	54	.9	.3	1.5	1.3	1.9	.8	3.4	1.2	54
.chansons	54	1.4	.7	1.8	1.8	2.5	1.2	4.4	1.3	54

SECONDARY SCHOOL FRANCAIS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER, EN POURCENTAGE, LE TEMPS QUE VOUS CONSACREZ A

TABLE 5.37 (Cont'd)

SECONDARY SCHOOL FRANCAIS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER, EN POURCENTAGE, LE TEMPS QUE VOUS CONSACREZ A CHACUN DES OBJECTIFS"

OBJECTIFS	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Culture:																	
Connaissance de l'héritage littéraire et culturel:																	
.poèmes	6	46	7	54	-	-	-	-	-	-	-	-	-	-	-	-	13
.romans	4	31	9	69	-	-	-	-	-	-	-	-	-	-	-	-	13
.contes	8	62	5	38	-	-	-	-	-	-	-	-	-	-	-	-	13
.théâtre	6	46	7	54	-	-	-	-	-	-	-	-	-	-	-	-	13
.films	7	54	6	46	-	-	-	-	-	-	-	-	-	-	-	-	13
.chansons	4	31	9	69	-	-	-	-	-	-	-	-	-	-	-	-	13
Secteurs des études littéraires:																	
littérature française	-	-	1	8	-	-	2	15	3	23	3	23	3	23	1	8	13
littérature canadienne	-	-	-	-	1	8	1	8	2	14	4	31	4	31	1	8	13
littérature étrangère	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13

TABLE 5.38
SECONDARY SCHOOL FRANCAIS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER, EN POURCENTAGE, LE TEMPS QUE VOUS CONSECREZ A CHACUN DES OBJECTIFS"

OBJECTIFS	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-75%	76+%	TOTAL
	N	%	N	%	N	%	N	%	
Langue:									
Etude des éléments fondamentaux de la langue:									
.orthographe	1	8	11	84	1	8	-	-	13
.vocabulaire	3	23	10	77	-	-	-	-	13
.grammaire	2	15	10	77	1	8	-	-	13
.stylistique (structures de phrases, phraseologie etc.)	-	-	13	100	-	-	-	-	13
Travaux écrits:									
.compréhension du sujet	2	15	11	85	-	-	-	-	13
.organisation	2	15	11	85	-	-	-	-	13
.rédaction	3	23	9	69	-	1	8	-	13
.analyse et commentaire de textes	3	23	10	77	-	-	-	-	13
Expression orale:									
.prononciation	3	23	10	77	-	-	-	-	13
.lecture expressive	6	46	7	54	-	-	-	-	13
.expression spontanée	5	38	8	62	-	-	-	-	13
.exposés	2	15	9	70	2	15	-	-	13
Linguistique:									
Principes généraux	8	61	4	31	1	8	-	-	13

TABLE 6.1
SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																				TOTAL	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20+
Secondary school teaching	0	1	1	1	1	2	5	1	4	0	4	2	3	2	2	2	2	1	1	1	15	51
Teaching this course (or its equivalent)	0	9	3	5	1	5	2	1	2	4	0	3	2	0	0	2	0	1	1	1	9	51
Related professional (non-teaching) experience	44	3	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	51

TABLE 6.2
SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR		%
	N		
No	35		70
Elementary	6		12
Community college	1		2
University	4		8
Other	3		6
More than one other	1		2
Total	50		100

TABLE 6.3
SECONDARY SCHOOL FRENCH
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 5	
	N	%
Doctorate	0	0
Master's	15	30
Honour Bachelor's (4 year)	27	54
Bachelor's	7	14
Post-Secondary Diploma	0	0
Other	1	2
Total	50	100

TABLE 6.4
SECONDARY SCHOOL FRENCH
OSSTF/AEFO CERTIFICATION CATEGORY

	YEAR 5	
	N	%
Category 1/A1	2	4
Category 2/A2	4	8
Category 3/A3	6	12
Category 4/A4	38	76
Total	50	100

TABLE 6.5
SECONDARY SCHOOL FRENCH
TEACHERS' POSITION IN SCHOOL

	YEAR 5	
	N	%
Principal	0	0
Vice-principal	0	0
Department head	28	55
Assistant or associate head	3	6
Teacher	18	35
Other	2	4
Total	51	100

TABLE 6.6
SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 5	
	N	%
Yes, it is my area	48	98
Yes, it is closely related	1	2
No	0	0
Total	49	100

TABLE 6.7
SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	24	47	20	39	6	12	1	2	51
Knowledge of subject of incoming students	26	52	17	34	3	6	4	8	50
Relationship between this course and others taken concurrently	6	13	15	31	12	25	15	31	48
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	9	18	17	34	11	22	13	26	50
Ontario Ministry of Education guidelines	16	31	17	33	11	22	7	14	51
Course outline assigned to you	14	33	7	16	5	12	17	39	43
Special interests or training you might have	21	41	17	33	9	18	4	8	51
Content and approach of principal text(s)	26	52	13	26	6	12	5	10	50
Staffing	6	17	5	15	3	9	20	59	34
Other	3	7	2	5	-	-	37	88	42

TABLE 6.8

SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 5	
	N	%
Yes	49	96
No	2	4
Total	51	100

TABLE 6.9

SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS

	YEAR 5	
	N	%
Excellent	2	4
Good	34	69
Fair	13	27
Poor	-	-
Total	49	100

TABLE 6.10

SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 5	
	N	%
A great deal	33	65
A moderate amount	15	29
Very little	2	4
Do not know	1	2
Total	51	100

TABLE 6.11

SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 5	
	N	%
Great extent	1	2
Moderate extent	1	2
Small extent	8	16
Not at all	41	80
Total	51	100

TABLE 6.12

SECONDARY SCHOOL FRENCH YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
 EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Dictation	12	24	38	74	1	2	-	-	-	-	-	-	-	-	-	-	51	4.0	3.4
Translations by students (exclusive of testing)	11	22	28	55	12	23	-	-	-	-	-	-	-	-	-	-	51	7.6	6.8
Language laboratory	41	80	10	20	-	-	-	-	-	-	-	-	-	-	-	-	51	1.3	3.0
Lecture (with or without provision for student questions)	15	29	26	51	9	18	1	2	-	-	-	-	-	-	-	-	51	6.6	7.0
Socratic (question and answer technique, interaction between students and instructor)	2	4	2	4	13	25	13	25	8	16	4	8	8	16	1	2	51	32.6	18.2
Small group activities (with the instructor supervising a number of small groups at the same time)	19	37	24	47	5	10	1	2	2	4	-	-	-	-	-	-	51	6.7	9.1
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	23	45	18	35	5	10	5	10	-	-	-	-	-	-	-	-	51	6.6	8.8
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor)	17	33	34	67	-	-	-	-	-	-	-	-	-	-	-	-	51	3.6	3.5
Individualized instruction (each student proceeds at his own speed; e.g., programmed learning, learning modules)	44	86	7	14	-	-	-	-	-	-	-	-	-	-	-	-	51	0.7	2.1
Student presentations (exclusive of seminars, tutorials)	12	23	32	63	7	14	-	-	-	-	-	-	-	-	-	-	51	6.3	5.4

TABLE 6.12 (Cont'd)

SECONDARY SCHOOL FRENCH YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
 EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL MEAN		S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		%	
Testing	3	6	35	69	12	23	1	2	-	-	-	-	-	-	-	-	51	9.0	5.6
Audiovisual (television, tapes, films, radio, etc.)	7	14	39	76	4	8	1	2	-	-	-	-	-	-	-	-	51	6.1	5.2
Field trips, visits by resource personnel	33	65	18	35	-	-	-	-	-	-	-	-	-	-	-	-	51	1.3	2.1
Dramatic presentations (vignettes, dialogues, etc.	24	47	26	51	1	2	-	-	-	-	-	-	-	-	-	-	51	2.9	3.5
Other	42	82	7	14	2	4	-	-	-	-	-	-	-	-	-	-	51	1.7	3.9

TABLE 6.13

SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"WHAT PROPORTION OF THE INSTRUCTION IN
THIS COURSE IS GIVEN IN FRENCH?"

	YEAR 5	
	N	%
0%	-	-
1-10%	-	-
11-20%	-	-
21-30%	1	2
31-40%	2	4
41-50%	1	2
51-75%	8	16
76+%	39	76
Total	51	100

TABLE 6.14

SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"HOW MUCH TIME IS NORMALLY SPENT ON
REVIEW OF MATERIAL TAKEN PRIOR TO THIS COURSE?"

	YEAR 5	
	N	%
0%	2	4
1-10%	28	55
11-20%	12	23
21-30%	5	10
31-40%	2	4
41-50%	1	2
51-75%	1	2
76+%	-	-
Total	51	100

TABLE 6.15

SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	34	71	6	12	1	2	7	15	48
Main text plus supplementary text (s)	12	25	16	34	6	13	13	28	47
Two or more main texts or materials from other texts	34	66	7	14	6	12	4	8	51
Simplified editions of great works	--	--	6	12	6	12	37	76	49
Works of criticism	--	--	3	6	20	40	27	54	50
Reference books, dictionaries, encyclopedias, etc.	11	22	21	41	19	37	--	--	51
Individualized learning packages	1	2	2	4	7	14	39	80	49
Other classroom resources (magazines, information kits, newspapers, etc.)	2	4	18	35	26	51	5	10	51
Audiovisual media (television, tapes, film strips, etc.)	5	10	12	23	29	57	5	10	51
Language laboratory materials	1	2	3	6	10	21	33	70	47
Mimeographed materials (lecture notes, etc.)	14	28	15	29	15	29	7	14	51
Other	1	2	1	2	--	--	47	96	49

TABLE 6.16
SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 5	
	N	%
0%*	-	-
1-25%	-	-
26-50%	7	14
51-75%	12	23
76-100%	21	41
101-150%	6	12
151-200%	4	8
201+%	1	2
Total	51	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 6.17
SECONDARY SCHOOL FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 5	
	N	%
Yes	30	59
No	18	35
Not Applicable	3	6
Total	51	100

TABLE 6.18
SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final Examination*	-	-	1	7	-	-	8	57	4	29	1	7	-	-	-	-	14	30.1	9.7
Mid-term examination	13	25	2	4	12	24	6	12	9	18	5	10	3	6	1	2	51	24.3	20.5
Other written tests	1	2	7	14	20	39	13	25	1	2	6	12	3	6	-	-	51	24.7	15.1
Other oral tests	8	16	22	43	19	37	2	4	-	-	-	-	-	-	-	-	51	10.2	6.8
Individual papers (essays, reports, book reports, etc.)	16	31	16	31	15	30	3	6	-	-	1	2	-	-	-	-	51	9.9	9.8
Group or team papers	46	90	5	10	-	-	-	-	-	-	-	-	-	-	-	-	51	0.5	1.8
Individual projects (exclusive of essays, reports)	33	65	12	23	6	12	-	-	-	-	-	-	-	-	-	-	51	3.6	5.6
Group or team projects	43	84	7	14	1	2	-	-	-	-	-	-	-	-	-	-	51	1.2	3.0
Notebooks	49	96	2	4	-	-	-	-	-	-	-	-	-	-	-	-	51	0.2	0.8
Effort	31	61	19	37	1	2	-	-	-	-	-	-	-	-	-	-	51	2.3	3.1
Class participation	21	41	25	49	5	10	-	-	-	-	-	-	-	-	-	-	51	4.7	5.2
Attendance	43	84	8	16	-	-	-	-	-	-	-	-	-	-	-	-	51	0.7	1.9
Individual oral pre- sentations (prepared or spontaneous speeches)	16	31	27	53	8	16	-	-	-	-	-	-	-	-	-	-	51	5.9	5.4
Group dramatic presentations	40	78	9	18	1	2	1	2	-	-	-	-	-	-	-	-	51	1.9	5.1
Other	49	96	-	-	1	2	1	2	-	-	-	-	-	-	-	-	51	0.8	4.5

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 6.19

SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal Of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Skill in reading	24	47	26	51	1	2	-	-	51	2.5	0.5
Skill in writing	34	67	17	33	-	-	-	-	51	2.7	0.5
Aural comprehension	40	78	8	16	3	6	-	-	51	2.7	0.6
Skill in speaking	42	82	9	18	-	-	-	-	51	2.8	0.4
Knowledge of literary history	-	-	7	14	28	57	14	29	49	0.9	0.6
Sensitivity to beauty and elegance in language	7	14	20	39	19	37	5	10	51	1.6	0.8
Appreciation of and sensitivity to cultural variety	16	31	20	39	13	26	2	4	51	2.0	0.9
Application of techniques of literary criticism	-	-	4	8	26	52	20	40	50	0.7	0.6
Appreciation of language as a medium of human thought	15	29	21	41	13	26	2	4	51	2.0	0.8
Interest in language studies	11	22	21	41	17	33	2	4	51	1.8	0.8
Respect for precision of expression (oral and/or written)	33	65	17	33	-	-	1	2	51	2.6	0.6
Self-confidence in French	36	71	15	29	-	-	-	-	51	2.7	0.5
Self-reliance	20	40	23	46	6	12	1	2	50	2.2	0.7
Understanding of self	12	24	12	24	17	34	9	18	50	1.5	1.0

TABLE 6.20
SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY MEAN ^a	S.D.	MEAN	EXIT S.D.	ENTRY MEAN	S.D.	MEAN	EXIT S.D.	
Grammar - basic morphology and syntax	75	1.9	.6	2.7	.5	2.6	.5	3.4	.5	61
Grammar - conjugation of all regular and auxiliary verbs	73	2.0	.8	2.9	.6	2.8	.6	3.6	.5	71
Grammar - common tenses and moods	75	2.0	.7	2.8	.6	2.7	.5	3.5	.5	65
Ability to apply grammar in writing and in speaking	86	1.6	.6	2.6	.5	2.6	.6	3.4	.5	84
Ability to express ideas clearly and correctly in written French	82	1.5	.5	2.5	.6	2.6	.5	3.4	.5	86
Skill in translation - English to French	78	1.4	.6	2.3	.7	2.3	.7	3.0	.7	73
Skill in translation - French to English	51	1.6	.8	2.3	.9	2.4	.8	3.0	1.0	49
Vocabulary - general	90	1.8	.5	2.8	.5	2.7	.6	3.4	.5	69
Vocabulary - idiomatic expressions	82	1.5	.6	2.5	.6	2.3	.6	3.1	.6	69
Vocabulary - Canadianisms	61	.9	.8	1.8	.8	1.9	.8	2.6	.8	61
Reading comprehension	75	2.0	.6	2.8	.5	2.7	.6	3.5	.5	69
Aural comprehension	76	2.0	.7	2.8	.5	2.8	.6	3.5	.5	61
Fluency in spoken French	76	1.7	.7	2.6	.7	2.6	.5	3.4	.5	69
Literary history	53	.5	.6	1.2	.7	1.3	.9	2.0	1.0	47

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 4 indicating Mastery, Competence in High Level, Creative Situations. See French questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 6.20 (Cont'd)

SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Concepts of literary criticism	47	.4	.7	1.2	.7	1.0	.9	1.7	1.1	41
Vocabulary of literary criticism	43	.4	.6	1.0	.8	1.0	.9	1.6	1.1	37
Understanding of cultural differences and similarities	80	1.4	.7	2.4	.7	2.2	.7	3.1	.7	63

TABLE 6.21

SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DESCRIBE IN QUANTITATIVE TERMS THE ACTUAL AND
PREFERRED RATE OF VOCABULARY BUILDING"

	ACTUAL				PREFERRED			
	ENTRY		EXIT		ENTRY		EXIT	
	N	%	N	%	N	%	N	%
Above 3000 words	1	2	3	6	2	4	24	47
Between 2000 and 3000 words	2	4	24	47	21	41	12	24
Between 1000 and 2000 words	25	49	9	18	15	29	3	6
Below 1000 words	8	16	1	2	1	2	-	-
Have not quantified	15	29	14	27	12	24	12	24
Total	51	100	51	100	51	100	51	100

TABLE 6.22
SECONDARY SCHOOL FRENCH YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TOTAL CLASS TIME SPENT ON EACH OBJECTIVE"

OBJECTIVE	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51+%	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Grammar - basic morphology and syntax	1	2	7	14	23	45	11	21	6	12	2	4	1	2
Grammar - conjugation of all regular and auxiliary verbs														
Grammar - common tenses and moods														
Ability to apply grammar in writing and speaking														
Ability to express ideas clearly and correctly in written French	-	-	28	55	20	39	3	6	-	-	-	-	-	-
Skill in translation - English to French	7	14	35	69	9	17	-	-	-	-	-	-	-	-
Skill in translation - French to English	20	39	30	59	1	2	-	-	-	-	-	-	-	-
Vocabulary - general														
Vocabulary - idiomatic expressions	-	-	41	80	10	20	-	-	-	-	-	-	-	-
Vocabulary - Canadianisms	-	-	27	53	16	31	7	14	1	2	-	-	-	-
Reading comprehension	4	8	33	65	12	23	1	2	1	2	-	-	-	-
Aural comprehension														
Fluency in spoken French	2	4	26	51	18	35	3	6	1	2	-	-	1	2
Literary history	32	63	19	37	-	-	-	-	-	-	-	-	-	-
Concepts of literary criticism	38	75	13	25	-	-	-	-	-	-	-	-	-	-
Vocabulary of literary criticism	41	80	10	20	-	-	-	-	-	-	-	-	-	-
Understanding of cultural differences and similarities	6	12	39	76	6	12	-	-	-	-	-	-	-	-

TABLE 7.1

UNIVERSITY FRENCH YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS															
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	TOTAL	
University teaching	0	0	1	3	0	2	2	0	1	3	2	5	1	0	20	
Teaching this course (or its equivalent)	0	3	1	4	2	6	1	1	0	1	1	0	0	0	20	

TABLE 7.2

UNIVERSITY FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	5	25
Elementary	2	10
Secondary	7	35
Community college	0	
Other	1	5
More than one	5	25
Total	20	100

TABLE 7.3
UNIVERSITY FRENCH
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1	
	N	%
Doctorate	8	40
Master's	10	50
Honour Bachelor's (4 year)	2	10
Bachelor's	0	0
Post-Secondary Diploma	0	0
Total	20	100

TABLE 7.4
UNIVERSITY FRENCH
UNIVERSITY CATEGORY

	YEAR 1	
	N	%
Professor	1	5
Associate Professor	5	25
Assistant Professor	7	35
Lecturer/Instructor	5	25
Other	2	10
Total	20	100

TABLE 7.5
UNIVERSITY FRENCH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE."

	Great Extent			Moderate Extent			Small Extent			Not At All			Not Applicable			TOTAL
	N	%		N	%		N	%		N	%		N	%		
Interests of students	14	70	1	5	2	10	2	10	2	10	1	5	20			
Knowledge of subject of incoming students	10	50	6	30	1	5	2	10	1	5	5	20				
Relationship between this course and others taken concurrently	3	15	2	10	5	25	7	35	3	15	20					
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	2	10	6	30	4	20	5	25	3	15	20					
Ontario Ministry of Education guidelines	-	-	-	-	1	5	14	70	5	25	20					
Course outline assigned to you	6	30	6	30	3	15	2	10	3	15	20					
Special interests or training you might have	8	40	4	20	2	10	4	20	2	10	20					
Content and approach of principal text(s)	8	40	7	35	3	15	1	5	1	5	20					
Staffing	4	20	2	10	2	10	4	20	8	40	20					
Other	2	10	-	-	-	-	-	-	-	-	18	90	20			

TABLE 7.6

UNIVERSITY FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE

	YEAR 1	
	N	%
Yes	15	75
No	5	25
Total	20	100

TABLE 7.7

UNIVERSITY FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
Excellent	-	-
Good	1	7
Fair	12	80
Poor	2	13
Total	15	100

TABLE 7.8

UNIVERSITY FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
A great deal	19	95
A moderate amount	1	5
Very little	-	-
Do not know	-	-
Total	20	100

TABLE 7.9

UNIVERSITY FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 1	
	N	%
Great extent	2	10
Moderate extent	2	10
Small extent	4	20
Not at all	12	60
Total	20	100

TABLE 7.10

UNIVERSITY FRENCH YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO

TEACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

[illegible]

TABLE 7.11

UNIVERSITY FRENCH
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"WHAT PROPORTION OF THE INSTRUCTION IN
THIS COURSE IS GIVEN IN FRENCH?"

	YEAR 1	
	N	%
0%	-	-
1-10%	-	-
11-20%	-	-
21-30%	-	-
31-40%	-	-
41-50%	-	-
51-75%	-	-
76+%	20	100
Total	20	100

TABLE 7.12

UNIVERSITY FRENCH
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"HOW MUCH TIME IS NORMALLY SPENT ON
REVIEW OF MATERIAL TAKEN PRIOR TO THIS COURSE?"

	YEAR 1	
	N	%
0%	9	48
1-10%	4	21
11-20%	3	16
21-30%	1	5
31-40%	1	5
41-50%	-	-
51-75%	1	5
76+%	-	-
Total	19	100

TABLE 7.13
UNIVERSITY FRENCH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Main text	13	68	3	16	-	-	2	11	1	5	19
Main text plus supplementary text(s)	8	42	1	5	5	26	3	16	2	11	19
Two or more main texts or materials from other texts	8	44	2	11	1	6	5	28	2	11	18
Simplified editions of great works	1	6	1	6	1	6	13	71	2	11	18
Works of criticism	1	6	2	11	6	33	7	38	2	11	18
Reference books, dictionaries, encyclopedias, etc.	5	28	7	38	5	28	1	6	-	-	18
Individualized learning packages	1	6	-	-	1	6	14	79	2	11	18
Other classroom resources (magazines, newspapers, etc.)	2	11	2	11	6	33	8	45	-	-	18
Audiovisual media (television, tapes, film strips, etc.)	2	11	6	33	3	17	7	38	-	-	18
Language laboratory materials	4	20	6	32	2	11	6	32	1	5	19
Mimeographed materials (lecture notes, etc.)	2	11	5	26	4	21	7	37	1	5	19
Other	-	-	-	-	-	-	6	86	1	14	7

TABLE 7.14
UNIVERSITY FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1	
	N	%
0%	-	-
1-25%	-	-
26-50%	1	5
51-75%	-	-
76-100%	7	37
101-150%	4	21
151-200%	5	26
201+%	2	11
Total	19	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 7.15
UNIVERSITY FRENCH
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 1	
	N	%
Yes	1	5
No	18	90
Not Applicable	1	5
Total	20	100

TABLE 7.16
UNIVERSITY FRENCH YEAR 1
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Final Examination*	1	5	2	10	5	25	2	10	9	45	1	5	-	-	-	-	20
Mid-term examination	3	15	8	40	5	25	2	10	1	5	1	5	-	-	-	-	20
Other written tests	5	25	7	35	3	15	3	15	1	5	1	5	-	-	-	-	20
Other oral tests	8	40	6	30	5	25	1	5	-	-	-	-	-	-	-	-	20
Individual papers (essays, reports, book reports, etc.)	5	25	4	20	5	25	4	20	1	5	1	5	-	-	-	-	20
Group or team papers	20	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Individual projects (exclusive of essays, reports)	16	80	4	20	-	-	-	-	-	-	-	-	-	-	-	-	20
Group or team projects	18	90	2	10	-	-	-	-	-	-	-	-	-	-	-	-	20
Notebooks	20	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Effort	11	55	7	35	1	5	-	-	-	-	1	5	-	-	-	-	20
Class participation	7	35	12	60	1	5	-	-	-	-	-	-	-	-	-	-	20
Attendance	14	70	6	30	-	-	-	-	-	-	-	-	-	-	-	-	20
Individual oral pre- sentations (prepared or spontaneous speeches)	15	75	5	25	-	-	-	-	-	-	-	-	-	-	-	-	20
Group dramatic presentations	19	95	1	5	-	-	-	-	-	-	-	-	-	-	-	-	20
Other	16	80	3	15	-	-	1	5	-	-	-	-	-	-	-	-	20

*When respondents indicated that students could be exempted from their final examinations, the final mark allocated was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 7.17

UNIVERSITY FRENCH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little		No		Not		TOTAL
	N	%	N	%	N	%	N	%	Applicable	%	
Skill in reading	11	55	6	30	3	15	-	-	-	-	20
Skill in writing	16	80	4	20	-	-	-	-	-	-	20
Aural comprehension	17	85	3	15	-	-	-	-	-	-	20
Skill in speaking	13	65	6	30	1	5	-	-	-	-	20
Knowledge of literary history	1	5	4	20	4	20	7	35	4	20	20
Sensitivity to beauty and elegance in language	4	20	4	20	8	40	4	20	-	-	20
Appreciation of and sensitivity to cultural variety	5	25	9	45	5	25	1	5	-	-	20
Application of techniques of literary criticism	4	20	2	10	1	5	9	45	4	20	20
Appreciation of language as a medium of human thought	5	25	12	60	1	5	2	10	-	-	20
Interest in language studies	4	20	8	40	5	25	3	15	-	-	20
Respect for precision of expression (oral and/or written)	15	75	4	20	1	5	-	-	-	-	20
Self-confidence in French	16	80	3	15	1	5	-	-	-	-	20
Self-reliance	8	40	6	30	2	10	1	5	3	15	20
Understanding of self	4	20	4	20	5	25	3	15	4	20	20

TABLE 7.18
UNIVERSITY FRENCH YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS ^b %
		MEAN ^a	S.D.	EXIT	ENTRY	MEAN	S.D.	
Grammar - basic morphology and syntax	70	1.6	.6	2.4	.5	2.6	.6	75
Grammar - conjugation of all regular and auxiliary verbs	75	1.6	.8	2.5	.6	2.6	.8	70
Grammar - common tenses and moods	70	1.7	.9	2.6	.6	2.7	.8	70
Ability to apply grammar in writing and in speaking	80	1.4	.8	2.4	.6	2.4	.6	85
Ability to express ideas clearly and correctly in written French	80	1.1	.8	2.2	.8	2.4	.7	85
Skill in translation - English to French	45	1.1	.5	1.8	.4	1.8	.5	45
Skill in translation - French to English	30	1.4	.7	2.2	.7	1.7	.5	15
Vocabulary - general	80	1.4	.7	2.4	.6	2.6	.6	90
Vocabulary - idiomatic expressions	90	.9	.6	2.1	.6	2.4	.7	95
Vocabulary - Canadianisms	50	.7	.5	1.5	.5	2.0	.8	65
Reading comprehension	75	1.7	.6	3.5	.5	2.5	.6	60
Aural comprehension	75	1.7	.7	2.6	.5	2.6	.6	75

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 4 indicating Mastery, Competence in High Level, Creative Situations. See French questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 7.18 (Cont'd)

UNIVERSITY FRENCH YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	MEAN	S.D.	EXIT	
Fluency in spoken French	80	1.2	.7	2.2	.7	2.2	3.4	85
Literary history	45	.3	.5	1.2	.8	1.3	1.9	40
Concepts of literary criticism	45	.4	.6	1.3	1.0	1.6	2.2	45
Vocabulary of literary criticism	45	.4	.6	1.3	1.0	1.6	2.1	45
Understanding of cultural differences and similarities	70	1.1	.4	2.1	.6	1.9	2.8	65

TABLE 7.19

UNIVERSITY FRENCH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DESCRIBE IN QUANTITATIVE TERMS THE ACTUAL AND
PREFERRED RATE OF VOCABULARY BUILDING"

	ACTUAL			PREFERRED		
	ENTRY N	EXIT %	ENTRY N	EXIT %	ENTRY N	EXIT %
Above 3000 words	-	-	1	5	3	39
Between 2000 and 3000 words	1	6	7	39	4	33
Between 1000 and 2000 words	4	24	5	28	7	11
Below 1000 words	6	35	2	11	1	-
Have not quantified	6	35	3	17	3	17
Total	17	100	18	100	18	100

TABLE 7.20
UNIVERSITY FRENCH YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TOTAL CLASS TIME SPENT ON EACH OBJECTIVE"

OBJECTIVE	N	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51%+	TOTAL
		%	N	%	N	%	N	%	%
Grammar - basic morphology and syntax.									
Grammar - conjugation of all regular and auxiliary verbs.	2	11	4	21	8	41	2	11	2
Grammar - common tenses and moods.									
Ability to apply grammar in writing and speaking.									
Ability to express ideas clearly and correctly in written French.	1	5	10	53	6	32	-	1	5
Skill in translation - English to French.	13	69	5	26	1	5	-	-	-
Skill in translation - French to English.	15	79	4	21	-	-	-	-	-
Vocabulary - general.									
Vocabulary - idiomatic expressions	3	16	12	63	4	21	-	-	-
Vocabulary - Canadianisms.									
Reading comprehension.	2	11	12	63	4	21	1	5	-
Aural comprehension.	1	5	9	47	7	37	2	11	-
Fluency in spoken French.	1	5	7	37	8	42	3	16	-
Literary history.	13	69	4	21	1	5	1	5	-
Concepts of literary criticism.	11	57	5	26	1	5	1	5	-
Vocabulary of literary criticism.	12	64	5	26	-	-	1	5	1
Understanding of cultural differences and similarities.	7	37	11	58	1	5	-	-	-

TABLE 8.1

SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	TOTAL
Secondary school teaching	0	1	1	1	1	1	1	2	4	4	4	5	3	5	2	1	4	2	2	1	4	49
Teaching this course (or its equivalent)	1	6	3	5	6	5	1	5	4	2	5	0	2	0	1	0	0	0	1	0	3	50
Related professional (non-teaching) experience	42	2	1	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	50

TABLE 8.2

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 5	
	N	%
No	36	72
Elementary	4	8
Community college	0	0
University	5	10
Other	4	8
More than one other	1	2
Total	50	100

TABLE 8.3

SECONDARY SCHOOL HISTORY
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 5	
	N	%
Doctorate	0	0
Master's	16	32
Honour Bachelor's (4 year)	26	52
Bachelor's	7	14
Post-Secondary diploma	0	0
Other	1	2
Total	50	100

TABLE 8.4

SECONDARY SCHOOL HISTORY
OSSTF/AEFO CERTIFICATION CATEGORY

	YEAR 5	
	N	%
Category 1/A1	0	0
Category 2/A2	1	2
Category 3/A3	2	4
Category 4/A4	47	94
Total	50	100

TABLE 8.5

SECONDARY SCHOOL HISTORY
TEACHERS' POSITION IN SCHOOL

	YEAR 5	
	N	%
Principal	0	0
Vice-principal	1	2
Department head	28	56
Assistant or associate head	5	10
Teacher	16	32
Other	0	0
Total	50	100

TABLE 8.6

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 5	
	N	%
Yes, it is my area	41	82
Yes, it is closely related	6	12
No	3	6
Total	50	100

TABLE 8.7
SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	19	38	26	52	4	8	1	2	50
Knowledge of subject of incoming students	6	12	18	38	15	31	9	19	48
Relationship between this course and others taken concurrently	3	6	13	28	15	33	15	33	46
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	8	17	11	23	14	30	14	30	47
Ontario Ministry of Education guidelines	17	34	18	36	7	14	8	16	50
Course outline assigned to you	7	17	7	17	4	10	23	56	41
Special interests or training you might have	24	48	20	40	3	6	3	6	50
Content and approach of principal text(s)	4	8	16	33	19	40	9	19	48
Staffing	3	8	7	17	1	2	30	73	41
Other	5	11	-	-	-	-	40	89	45

TABLE 8.8

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 5	
	N	%
Yes	33	66
No	17	34
Total	50	100

TABLE 8.9

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 5	
	N	%
Excellent	-	-
Good	19	40
Fair	27	56
Poor	2	4
Total	48	100

TABLE 8.10

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 5	
	N	%
A great deal	39	78
A moderate amount	9	18
Very little	1	2
Do not know	1	2
Total	50	100

TABLE 8.11

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 5	
	N	%
Great extent	2	4
Moderate extent	3	6
Small extent	11	22
Not at all	34	68
Total	50	100

TABLE 8.12

SECONDARY SCHOOL HISTORY YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
 EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10		11-20		21-30		31-40		41-50		51-75		75+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	6	12	32	64	5	10	4	8	2	4	-	-	1	2	-	-	50	10.8	12.3
Socratic (question and answer technique, interaction between students and instructor)	1	2	8	16	16	32	4	8	6	12	7	14	8	16	-	-	50	31.3	18.6
Small group activities (with the instructor supervising a number of small groups)	15	30	29	58	4	8	1	2	1	2	-	-	-	-	-	-	50	6.5	7.8
Seminar, tutorial (with or without additional instructors; this technique may include student presentations)	8	16	23	46	8	16	4	8	4	8	2	4	1	2	-	-	50	15.0	14.5
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	9	18	32	64	7	14	2	4	-	-	-	-	-	-	-	-	50	7.4	6.4
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	42	84	7	14	-	-	1	2	-	-	-	-	-	-	-	-	50	1.2	3.9
Simulations, Games	30	60	19	38	1	2	-	-	-	-	-	-	-	-	-	-	50	2.3	4.0
Student presentations (exclusive of seminars, tutorials)	18	36	29	58	3	6	-	-	-	-	-	-	-	-	-	-	50	4.2	4.7
Testing	1	2	46	92	3	6	-	-	-	-	-	-	-	-	-	-	50	6.6	3.6
Library research (as a class activity; exclusive of independent study)	21	42	26	52	3	6	-	-	-	-	-	-	-	-	-	-	50	4.0	5.0
Audiovisual (television, tapes, films, etc.)	4	8	40	80	6	12	-	-	-	-	-	-	-	-	-	-	50	7.3	4.6
Field trips, visits by resource personnel	28	56	21	42	1	2	-	-	-	-	-	-	-	-	-	-	50	1.8	3.1

TABLE 8.13
SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	15	33	18	40	10	22	2	5	45
Main text plus supplementary text(s)	21	46	13	28	10	22	2	4	46
Two or more main texts or materials from other texts	24	50	11	23	9	19	4	8	48
Reference books, dictionaries, encyclopedias, etc.	23	46	14	28	12	24	1	2	50
Documents, journals and scholarly reviews	16	32	19	38	12	24	3	6	50
Individualized learning packages	-	-	3	7	9	20	32	73	44
Other classroom resources (magazines, information kits, newspapers, etc.)	6	12	20	40	20	40	4	8	50
Audiovisual media (television, tapes, film strips, etc.)	4	8	24	48	17	34	5	10	50
Mimeographed materials (lecture notes, etc.)	14	29	15	30	14	29	6	12	49
Other	5	10	-	-	2	4	41	86	48

TABLE 8.14

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 5	
	N	%
0%*	-	-
1-25%	1	2
26-50%	9	18
51-75%	3	6
76-100%	20	40
101-150%	8	16
151-200%	5	10
200%+	4	8
Total	50	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200

TABLE 8.15

SECONDARY SCHOOL HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 5	
	N	%
Yes	34	68
No	11	22
Not applicable	5	10
Total	50	100

TABLE 8.16

SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	38	79	1	2	5	11	3	6	1	2	-	-	-	-	-	-	48	4.3	9.0
Mid-term examination	7	15	4	8	10	21	14	29	10	21	3	6	-	-	-	-	48	22.7	13.3
Other written tests	5	10	2	6	16	33	17	35	7	14	-	-	-	-	1	2	48	22.8	13.2
Other oral tests	42	88	5	10	1	2	-	-	-	-	-	-	-	-	-	-	48	.9	3.3
Individual papers (essays, reports, book reports, etc.)	1	2	5	11	8	17	15	31	13	27	4	8	1	2	1	2	48	29.2	14.9
Group or team papers	37	77	9	19	1	2	1	2	-	-	-	-	-	-	-	-	48	1.9	4.6
Individual projects (exclusive of essays, reports)	29	61	11	23	4	8	2	4	-	-	2	4	-	-	-	-	48	6.2	11.7
Group or team projects	32	67	13	27	2	4	1	2	-	-	-	-	-	-	-	-	48	3.0	5.3
Class participation	17	36	26	54	4	8	-	-	1	2	-	-	-	-	-	-	48	5.6	6.3
Effort	35	73	13	27	-	-	-	-	-	-	-	-	-	-	-	-	48	1.1	2.1
Attendance	36	75	12	25	-	-	-	-	-	-	-	-	-	-	-	-	48	1.4	2.9
Other	45	94	1	2	2	6	-	-	-	-	-	-	-	-	-	-	48	.9	3.8

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 8.17

SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Acquire a specific body of historical information	15	30	31	62	3	6	1	2	50	2.2	.6
Develop skills required from analysis and interpretation of historical information	43	86	6	12	-	-	1	2	50	2.8	.5
Develop the ability to examine a historical problem from a variety of perspectives	38	76	9	18	2	4	1	2	50	2.7	.6
Consider historical issues in terms of the context of the time	23	46	23	46	4	8	-	-	50	2.4	.6
Understand the relationship between historical events and contemporary issues	29	58	19	38	2	4	-	-	50	2.5	.6
Develop an awareness of the complexity of historical issues	34	68	12	24	2	4	2	4	50	2.6	.8
Develop an awareness of one's relationship to society	13	27	19	39	14	28	3	6	49	1.9	.9
Develop an awareness of the growing interdependence of nations and people in the modern world	7	15	23	49	15	32	2	4	47	1.7	.8
Appreciate one's cultural heritage	15	31	20	41	12	24	2	4	49	2.0	.8
Develop an awareness of the diversity of cultures	15	31	17	34	15	31	2	4	49	1.9	.9
Develop the skills required for preparation and presentation of written work	35	70	15	30	-	-	-	-	50	2.7	.5
Develop the skills required for preparation and presentation of oral work	16	32	22	44	10	20	2	4	50	2.0	.8

TABLE 8.17 (cont'd)
 SECONDARY SCHOOL HISTORY YEAR 5
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal			Moderate			Very Little			No		TOTAL MEAN	S.D.
	N	%	Emphasis	N	%	Emphasis	N	%	Emphasis	N	%		
Encourage high scholastic standards	27	54	18	36	3	6	2	4	50	2.4	.8		
Develop an attitude which promotes critical assessment of new information	32	64	18	36	-	-	-	-	50	2.6	.5		
Develop an awareness of the approaches employed by related disciplines (e.g., economics, political science, sociology).	8	16	20	41	18	37	3	6	49	1.7	.8		
Increase student's interest in history	23	47	24	49	1	2	1	2	49	2.4	.6		
Develop:													
. respect and tolerance for diverse opinions and ideas	34	68	12	24	2	4	2	4	50	2.6	.8		
. independence; sense of responsibility;	32	64	15	30	2	4	1	2	50	2.6	.7		
. self-confidence	22	45	17	35	5	10	5	10	49	2.1	1.0		
. social conscience (concern for others)	19	39	20	41	6	12	4	8	49	2.1	.9		
. social skills (ability to work and interact with others)	13	27	25	51	7	14	4	8	49	2.0	.9		
Other	3	6	1	2	-	-	45	92	49	2.2	.8		

TABLE 8.18

SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N		%	
Thematic (e.g., nation-building, revolutions, great leaders)	26	58		
Chronological	7	15		
By period or era (e.g., Renaissance)	3	7		
By country(ies)	-	-		
By problems	9	20		
Other	-	-		
Total	45	100		

TABLE 8.19

SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF YOUR COURSE DEVOTED TO EACH ASPECT OF STUDY"

ITEM	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Social	3	6	9	18	21	42	14	28	3	6	-	-	-	-	-	-	50	19.5	9.6
Economic	2	4	5	10	21	42	20	40	2	4	-	-	-	-	-	-	50	21.9	8.2
Political	2	4	-	-	4	8	13	26	14	28	9	18	7	14	1	2	50	39.0	15.4
Cultural	5	10	23	46	17	34	4	8	1	2	-	-	-	-	-	-	50	13.0	8.3
Other	42	84	4	8	4	8	-	-	-	-	-	-	-	-	-	-	50	2.1	5.4

TABLE 8.20
SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF YOUR COURSE DEVOTED TO EACH COUNTRY"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Canada	-	-	1	2	-	-	-	-	3	6	7	14	16	32	23	46	50	73.6	22.1
U.S.A.	12	24	13	26	8	16	2	4	8	16	5	10	1	2	1	2	50	20.2	20.2
Europe	28	56	22	44	-	-	-	-	-	-	-	-	-	-	-	-	50	2.3	3.1
Britain	27	54	20	40	3	6	-	-	-	-	-	-	-	-	-	-	50	3.1	4.5
Other	45	90	4	8	1	2	-	-	-	-	-	-	-	-	-	-	50	0.8	3.2

TABLE 8.21
SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PROPORTION OF YOUR COURSE DEVOTED TO EACH TIME PERIOD"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Pre-1763	8	16	25	50	12	24	3	6	2	4	-	-	-	-	-	-	50	11.2	8.7
1764-1867	2	4	6	12	18	36	10	20	5	10	9	18	-	-	-	-	50	26.1	13.8
1868-1911	2	4	6	12	27	54	13	26	2	4	-	-	-	-	-	-	50	20.2	7.5
1912-1945	3	6	9	18	25	50	11	22	-	-	1	2	1	2	-	-	50	18.9	10.4
1946-present	6	12	13	26	15	30	9	18	4	8	-	-	3	6	-	-	50	19.4	15.8
Other	47	94	2	4	-	-	-	-	-	-	-	-	-	-	1	2	50	2.1	14.0

TABLE 8.22

SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS ^b	
		MEAN ^a	S.D.	ENTRY	EXIT	MEAN	S.D.
Research							
Use libraries effectively (card catalogues, reference materials, encyclopedias, etc.)	82	1.6	.6	2.6	.6	2.6	.5
Locate historical references (archives, government records, etc.)	64	.7	.9	1.6	.9	1.7	.9
Make effective use of historical references.	84	1.4	.7	2.4	.6	2.5	.7
Distinguish between primary and secondary sources.	76	1.4	1.1	2.5	.9	2.5	.8
Writing							
Demonstrate facility in planning and organizing written materials.	88	1.5	.7	2.5	.5	2.5	.5
Use clear, concise prose necessary for the written presentation of concepts (essays, reports).	84	1.3	.7	2.4	.7	2.6	.6
Use effective note-taking techniques.	74	1.6	.8	2.5	.7	2.6	.6

^a The means in this table are based on a response key which ranges from 0 indicating No Competence to 4 indicating Mastery, Competence in High Level, Creative Situations. See History questionnaire for details.

^b The figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 8.22 (Cont'd)

SECONDARY SCHOOL HISTORY YEAR 5

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ENTRY		ACTUAL LEVEL EXIT		ENTRY		PREFERRED LEVEL EXIT		DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.		%
Apply historical terminology appropriately (e.g., Renaissance).	78	1.4	.8	2.4	.8	2.5	.6	3.4	.6	78	
Use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography).	86	1.4	.8	2.7	.7	2.7	.7	3.5	.6	82	
Oral											
Explain concepts clearly.	88	1.3	.7	2.3	.6	2.5	.5	3.3	.5	90	
Present an extended argument effectively.	86	1.0	.8	2.2	.9	2.3	.6	3.3	.7	88	
Present a prepared report.	70	1.4	.7	2.4	.8	2.4	.7	3.3	.7	76	
Contribute effectively in a small group discussion.	76	1.5	.8	2.4	.6	2.4	.5	3.3	.6	70	
Analytic and Interpretive											
Comprehend a variety of historical sources:											
• documents	72	1.2	.7	2.1	.8	2.3	.7	3.2	.8	84	
• monographs	68	1.2	.9	2.1	.9	2.3	.8	3.1	.8	72	
• texts	68	1.8	.8	2.6	.8	2.7	.7	3.5	.7	64	
• other	12	1.0	.8	2.4	1.3	2.4	1.2	3.0	1.3	12	
Analyze material read in terms of:											
• identification of main thesis or argument	82	1.5	.8	2.5	.7	2.5	.7	3.5	.6	76	
• identification of significant/pertinent information.	80	1.6	.7	2.5	.7	2.6	.6	3.6	.5	76	

TABLE 8.22 (Cont'd)

SECONDARY SCHOOL HISTORY YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	
Present an argument effectively in terms of organization, substance, (supportive factual material) logical conclusions.	88	1.3	.7	2.4	.7	2.5	.6	3.4 .5 84
Distinguish between essential and non-essential information.	88	1.4	.8	2.5	.9	2.6	.7	3.5 .6 90
Distinguish between fact and interpretation.	78	1.5	.9	2.5	.8	2.5	.7	3.5 .7 80
Demonstrate understanding of basic historical concepts.	82	1.3	.9	2.3	.8	2.4	.7	3.4 .5 82
Compare and contrast various interpretations of historical events.	92	1.0	.9	2.3	.8	2.3	.8	3.3 .6 88
Identify bias.	82	1.6	.9	2.6	.9	2.5	.7	3.4 .7 70
Assess an argument in terms of available evidence.	86	1.5	.8	2.6	.8	2.4	.6	3.4 .6 74
Define a historical problem by means of an assessment of appropriate information.	88	1.0	.7	2.2	.7	2.3	.7	3.2 .6 88
Assess events in terms of their historical context.	90	1.2	.8	2.4	.8	2.4	.7	3.4 .6 88
Analyze the characteristics of a particular period, problem or theme in history.	84	1.4	.8	2.4	.8	2.4	.6	3.3 .6 82
Use historical concepts and information in order to understand contemporary issues.	90	1.1	.8	2.3	.7	2.4	.6	3.3 .6 80

TABLE 9.1
UNIVERSITY HISTORY YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS															TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+		
University teaching	0	0	1	0	0	2	1	1	2	4	1	4	2	4	22	
Teaching this course (or its equivalent)	0	2	2	2	1	4	1	1	4	2	1	0	2	0	22	

TABLE 9.2
UNIVERSITY HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1		%
	N		
No	10	50	
Elementary	0	0	
Secondary	5	25	
Community college	2	10	
Other	2	10	
More than one other	1	5	
Total	20	100	

TABLE 9.3
UNIVERSITY HISTORY
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1	
	N	%
Doctorate	19	86
Master's	1	5
Honour Bachelor's (4 year)	0	0
Bachelor's	0	0
Post-Secondary diploma	0	0
Other	2	9
Total	22	100

TABLE 9.4
UNIVERSITY HISTORY
UNIVERSITY CATEGORY

	YEAR 1	
	N	%
Professor	10	45
Associate Professor	6	27
Assistant Professor	5	23
Lecturer/Instructor	0	0
Other	1	5
Total	22	100

TABLE 9.5
UNIVERSITY HISTORY YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent N	%	Moderate Extent N	%	Small Extent N	%	Not At All N	%	Not Applicable N	%	TOTAL
Interests of students	10	48	7	33	3	14	1	5	-	-	21
Knowledge of subject of incoming students	4	21	6	32	2	10	7	37	-	-	19
Relationship between this course and others taken concurrently	1	5	2	10	5	25	11	55	1	5	20
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	2	11	5	26	2	11	10	52	-	-	19
Ontario Ministry of Education guidelines	-	-	1	5	-	-	12	63	6	32	19
Course outline assigned to you	4	21	-	-	-	-	7	37	8	42	19
Special interests or training you might have	13	62	5	23	1	5	1	5	1	5	21
Content and approach of principal text (s)	2	11	4	22	4	22	6	34	2	11	18
Staffing	4	25	2	13	2	13	5	31	3	18	16
Other	-	-	-	-	-	-	4	50	4	50	8

TABLE 9.6

UNIVERSITY HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 1	
	N	%
Yes	1	5
No	20	95
Total	21	100

TABLE 9.7

UNIVERSITY HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM
"WHAT IS THE QUALITY OF PREPARATION
OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
Excellent	-	-
Good	5	29
Fair	10	59
Poor	2	12
Total	17	100

TABLE 9.8

UNIVERSITY HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
A great deal	18	82
A moderate amount	4	18
Very little	-	-
Do not know	-	-
Total	22	100

TABLE 9.9

UNIVERSITY HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 1	
	N	%
Great extent	1	5
Moderate extent	2	9
Small extent	6	29
Not at all	12	57
Total	21	100

TABLE 9.11
UNIVERSITY HISTORY YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Main text	1	6	4	22	2	11	5	28	6	33	18
Main text plus supplementary text(s)	6	30	4	20	-	-	4	20	6	30	20
Two or more main texts or materials from other texts	10	48	6	29	1	5	3	17	1	5	21
Reference books, dictionaries, encyclopedias, etc.	1	5	6	30	9	45	3	15	1	5	20
Documents, journals and scholarly reviews	5	24	8	38	5	24	1	4	2	10	21
Individualized learning packages	2	10	-	-	1	5	15	75	2	10	20
Other classroom resources (magazines, information kits, newspapers, etc.)	-	-	-	-	2	10	16	80	2	10	20
Audiovisual media (television, tapes, film strips, etc.)	1	4	-	-	2	10	16	76	2	10	21
Mimeographed materials (lecture notes, etc.)	2	11	1	5	3	16	12	63	1	5	19
Other	-	-	-	-	-	-	7	78	2	22	9

TABLE 9.12
UNIVERSITY HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1	
	N	%
0%*	-	-
1-25%	-	-
26-50%	-	-
51-75%	-	-
76-100%	3	16
101-150%	2	10
151-200%	4	21
201+%	10	53
Total	19	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 9.13
UNIVERSITY HISTORY
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 1	
	N	%
Yes	2	11
No	16	84
Not applicable	1	5
Total	19	100

TABLE 9.14

UNIVERSITY HISTORY YEAR 1
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Final Examination*	3	13	-	-	1	5	9	41	9	41	-	-	-	-	-	-	22
Mid-term examination	8	40	6	30	4	20	2	10	-	-	-	-	-	-	-	-	20
Other written tests	11	61	3	17	-	-	3	17	-	-	-	-	1	5	-	-	18
Other oral tests	15	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
Individual papers (essays, reports, book reports, etc.)	-	-	-	-	-	-	5	23	10	45	3	14	4	18	-	-	22
Group or team papers	15	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
Individual projects (exclusive of essays, reports)	14	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	15
Group or team projects	15	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
Class participation	4	19	9	43	4	20	2	9	2	9	-	-	-	-	-	-	21
Effort	14	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	15
Attendance	15	94	1	6	-	-	-	-	-	-	-	-	-	-	-	-	16
Other	15	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 9.15
UNIVERSITY HISTORY 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Acquire a specific body of historical information	3	14	14	67	3	14	1	5	-	-	21
Develop skills required for analysis and interpretation of historical information	15	71	6	29	-	-	-	-	-	-	21
Develop the ability to examine a historical problem from a variety of perspectives	14	64	6	27	2	9	-	-	-	-	22
Consider historical issues in terms of the context of the time	13	62	8	38	-	-	-	-	-	-	21
Understand the relationship between historical events and contemporary issues	7	35	6	30	6	30	1	5	-	-	20
Develop an awareness of the complexity of historical issues	13	59	7	32	2	9	-	-	-	-	22
Develop an awareness of one's relationship to society	3	16	6	32	8	42	2	10	-	-	19
Develop an awareness of the growing interdependence of nations and people in the modern world	3	15	5	25	4	20	6	30	2	10	20
Appreciate one's cultural heritage	4	19	10	48	4	19	3	14	-	-	21
Develop an awareness of the diversity of cultures	6	27	10	45	2	9	3	14	1	5	22
Develop the skills required for preparation and presentation of written work	13	62	8	38	-	-	-	-	-	-	21

TABLE 9.15 (cont'd)

UNIVERSITY HISTORY YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Develop the skills required for preparation and presentation of oral work	5	25	6	30	5	25	4	20	-	-	20
Encourage high scholastic standards	12	60	8	40	-	-	-	-	-	-	20
Develop an attitude which promotes critical assessment of new information	14	67	6	28	1	5	-	-	-	-	21
Develop an awareness of the approaches employed by related disciplines (e.g., economics, political science, sociology)	4	20	5	25	9	45	2	10	-	-	20
Increase student's interest in history	14	67	7	33	-	-	-	-	-	-	21
Develop:											
. respect and tolerance for diverse opinions and ideas;	8	44	4	22	3	17	3	17	-	-	18
. independence; sense of responsibility	6	34	4	22	4	22	4	22	-	-	18
. self-confidence;	5	28	4	22	4	22	4	22	1	6	18
. social conscience (concern for others);	5	28	4	22	2	11	6	33	1	6	18
. social skills (ability to work and interact with others)	-	-	4	24	7	42	5	28	1	6	17
Other	2	50	1	25	-	-	1	25	-	-	4

TABLE 9.16

UNIVERSITY HISTORY YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE MAIN APPROACH OR APPROACHES YOU USE IN ORGANIZING YOUR COURSE"

	N	%
Thematic (e.g., nation building, revolutions, great leaders)	9	45
Chronological	2	10
By period or era (e.g., Renaissance)	2	10
By country(ies)	-	-
By problems	7	35
Other	-	-
Total	20	100

TABLE 9.17

UNIVERSITY HISTORY YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "ESTIMATE THE PROPORTION OF YOUR COURSE DEVOTED TO EACH ASPECT OF STUDY"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Social	2	9	-	-	7	33	10	48	1	5	1	5	-	-	-	-	21
Economic	2	10	1	5	7	35	9	45	-	-	1	5	-	-	-	-	20
Political	2	10	2	10	2	10	9	42	2	10	2	10	2	10	-	-	21
Cultural	5	24	3	14	4	19	7	33	-	-	1	5	-	-	1	5	21
Other	7	54	1	8	1	8	2	14	1	8	-	-	-	-	1	8	13

TABLE 9.18

UNIVERSITY HISTORY YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "ESTIMATE THE PROPORTION OF YOUR COURSE OF STUDY DEVOTED TO EACH COUNTRY"

ITEM	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Canada	3	23	3	23	2	15	-	-	1	8	-	-	-	-	4	31	13
U.S.A.	4	29	5	36	2	14	1	7	-	-	-	-	-	-	2	14	14
Europe	4	22	3	17	-	-	1	5	-	-	1	5	3	17	6	34	18
Britain	5	29	8	47	3	18	1	6	-	-	-	-	-	-	-	-	17
Other	9	69	2	15	-	-	1	8	-	-	-	-	1	8	-	-	13

TABLE 9.19

UNIVERSITY HISTORY YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS ^b	
		EXIT		ENTRY		EXIT	
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.
Research							
Use libraries effectively (card catalogues, reference materials, encyclopedias, etc.).	75	1.2	.8	2.3	.7	1.9	.5
Locate historical references (archives, government records, etc.)	55	.6	.7	1.5	1.0	1.3	.8
Make effective use of historical references	85	1.0	.6	2.2	.7	2.0	.6
Distinguish between primary and secondary sources	80	.7	.7	2.2	.7	1.8	.4
Writing							
Demonstrate facility in planning and organizing written materials	90	1.1	.7	2.3	.6	2.3	.6
Use clear, concise prose necessary for the written presentation of concepts (essays, reports)	95	.9	.6	2.0	.5	2.3	.6
Use effective note-taking techniques	70	1.0	.8	2.1	.6	2.0	.9

^aThe means in this table are based on a response key which ranges from 0 indicating No Competence to 4 indicating Mastery, Competence in High Level, Creative Situations. See History questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 9.19 (Cont'd)

UNIVERSITY HISTORY YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	MEAN	S.D.	EXIT	
Apply historical terminology appropriately (e.g., Renaissance)	25	.8	.7	2.2	.5	1.8	.7	65
Use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography)	85	.8	.8	2.0	1.0	1.6	.9	65
Explain concepts clearly	80	1.0	.8	2.0	.8	2.0	.7	75
Present an extended argument effectively	70	.6	.6	1.6	.9	1.8	.5	80
Present a prepared report	55	.9	.6	1.9	.9	1.8	.7	50
Contribute effectively in a small group discussion	60	1.4	.8	2.2	.8	2.3	.7	60
<u>Analytic and Interpretive</u>								
Comprehend a variety of historical sources:	60	.4	.5	1.5	.8	1.5	.9	60
documents								
monographs	85	.8	.6	1.9	.5	1.9	.7	70
texts	65	1.2	.6	2.1	.6	2.0	.5	60
<u>Analyse material read in terms of:</u>								
identification of main thesis or argument	100	.8	.6	2.0	.8	1.8	.5	95
identification of significant pertinent information	90	1.2	.6	2.3	.7	2.2	.5	85

Oral

TABLE 9.19 (Cont'd)

UNIVERSITY HISTORY YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		ENTRY		EXIT		ENTRY		EXIT			
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.		%
Present an argument effectively in terms of organization, substance, (supportive factual material) logical conclusions	100	.8	.6	2.1	.7	2.1	.6	3.3	.7		90
Distinguish between essential and non-essential information	80	1.0	.6	1.9	.6	2.2	.6	3.3	.6		85
Distinguish between fact and interpretation	95	.8	.6	2.1	.6	2.2	.6	3.2	.7		85
Demonstrate understand of basic historical concepts	90	.7	.5	1.9	.5	1.9	.5	3.1	.6		80
Compare and contrast various interpretations of historical events	85	.6	.6	1.9	.6	1.9	.7	3.0	.6		85
Identify bias	85	.8	.7	2.1	.7	2.0	.6	3.1	.7		80
Assess an argument in terms of available evidence	85	.7	.6	1.9	.6	1.8	.6	3.0	.8		75
Define a historical problem by means of an assessment of appropriate information	80	.5	.6	1.8	.7	1.7	.7	2.9	.8		70
Assess events in terms of their historical context	90	.6	.6	2.1	.6	1.9	.6	3.2	.5		75
Analyze the characteristics of a particular period, problem or theme in history	85	.7	.7	1.9	.5	2.0	.6	3.1	.6		75
Use historical concepts and information in order to understand contemporary issues	75	.6	.5	1.9	.5	1.6	.8	2.9	.8		55

TABLE 10.1
SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS														
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	TOTAL
Enseignement au niveau secondaire	0	0	0	0	1	0	1	2	6	2	0	2	0	0	14
Enseignement ce cours (ou son équivalent)	0	3	0	1	3	4	2	0	1	0	0	0	0	0	14

TABLE 10.2
SECONDARY SCHOOL HISTOIRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 5	
	N	%
Non	7	50
Elémentaire	3	21
Collégial	0	0
Universitaire	1	8
Autre niveau (precisez, s.v.p.)	0	0
Plus d'un niveau	3	21
Total	14	100

TABLE 10.3

SECONDARY SCHOOL HISTOIRE
DIPLOMES LES PLUS ELEVES DES PROFESSEURS

	L'AN 5	
	N	%
Doctorat	-	-
Maîtrise	-	-
Baccalauréat spécialisé	10	71
Baccalauréat général	4	29
Certificat post-secondaire	-	-
Autre diplôme	-	-
Total	14	100

TABLE 10.4

SECONDARY SCHOOL HISTOIRE
CATEGORIE DE L'OSSTF OU DE L'AEFO

	L'AN 5	
	N	%
Catégorie 1/A1	-	-
Catégorie 2/A2	1	7
Catégorie 3/A3	1	7
Catégorie 4/A4	12	86
Total	14	100

TABLE 10.5

SECONDARY SCHOOL HISTOIRE
LE POSTE DU PROFESSEUR DANS L'ECOLE

	L'AN 5	
	N	%
Directeur	-	-
Directeur adjoint	-	-
Chef de département	9	64
Chef adjoint	-	-
Professeur	5	36
Autre poste	-	-
Total	14	100

TABLE 10.6

SECONDARY SCHOOL HISTOIRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"CE COURS A-T-IL UN LIEN QUELCONQUE AVEC
VOTRE DOMAINE DE SPECIALISATION?"

	L'AN 5	
	N	%
Oui, il s'inscrit dans mon domaine de spécialisation	11	79
Oui, il s'y rattache indirectement	3	21
Non	-	-
Total	14	100

TABLE 10.7
SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP			MODERE-			UN PEU			PAS DU			ITEM NON		TOTAL
	N	%		N	%	MENT	N	%		N	%	TOUT	N	%	
Intérêt des étudiants	-	-		4	31		8	61		1	8		-	-	13
Connaissance du sujet par les étudiants	5	36		4	29		3	21		1	7		1	7	14
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	-	-		3	21		5	36		6	43		-	-	14
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	1	7		6	43		3	21		4	29		-	-	14
Programme-cadre du Ministère de l'éducation de l'Ontario	6	43		6	43		2	14		-	-		-	-	14
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	1	7		3	21		3	21		2	14		5	36	14
Votre propre intérêt pour la matière enseignée et/ou votre formation	12	86		2	14		-	-		-	-		-	-	14
Contenu et orientation du (des) manuel(s) de base	-	-		5	36		7	50		2	14		-	-	14
Corps enseignent	1	7		4	29		1	7		8	57		-	-	14

TABLE 10.8

SECONDARY SCHOOL HISTOIRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EXISTE-T-IL DES COURS PRE-REQUIS
(RECOMMANDES AU NIVEAU SECONDAIRE)?"

	L'AN 5	
	N	%
Oui	3	21
Non	11	79
Total	14	100

TABLE 10.9

SECONDARY SCHOOL HISTOIRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM --
"D'APRES VOUS, EST-CE QUE LES ETUDIANTS ETAIENT BIEN PREPARES
A SUIVRE VOTRE COURS?"

	L'AN 5	
	N	%
Oui, très bien	-	-
Oui, assez bien	1	7
Oui, bien	6	43
Non, pas suffisamment	7	50
Total	14	100

TABLE 10.10

SECONDARY SCHOOL HISTOIRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"QUELLE EST L'IMPORTANCE DE L'ECART QUI DIFFERENCIE LES ETUDIANTS
AU DEBUT DE VOTRE COURS?"

	L'AN 5	
	N	%
Ecart important	7	50
Ecart acceptable	5	36
Ecart négligeable	1	7
Impossible d'en juger	1	7
Total	14	100

TABLE 10.11

SECONDARY SCHOOL HISTOIRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"A QUEL POINT EST-CE-QUE CE COURS PERMET AUX ETUDIANTS
DE FAIRE DU PROGRES A UN RYTHME INDIVIDUEL?"

	L'AN 5	
	N	%
Beaucoup	-	-
Modérément	-	-
Un peu	4	29
Pas du tout	10	71
Total	14	100

SECONDARY SCHOOL HISTOIRE YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	\bar{X}	S
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Cours magistral (suivi ou non d'une discussion)	2	14	3	22	2	14	2	14	2	14	1	8	2	14	-	-	14	24.2	19.4
"Maïeutique" (méthode suscitant la réflexion au moyen de questions appropriées)	2	14	4	29	4	29	3	21	-	-	-	-	1	7	-	-	14	17.4	15.3
Travail en petits groupes (sous la surveillance du professeur)	4	29	7	50	3	21	-	-	-	-	-	-	-	-	-	-	14	7.1	6.9
Séminaire (travail d'un seul groupe dirigé ou non par un professeur; cette technique peut comprendre des exposés d'étudiants)	2	14	9	64	3	22	-	-	-	-	-	-	-	-	-	-	14	8.1	6.0
Travail individuel (les étudiants font en classe le travail requis pour le cours et reçoivent, au besoin, une aide supplémentaire du professeur; travail à la bibliothèque ou centre de ressources inclus)	2	14	6	43	5	36	1	7	-	-	-	-	-	-	-	-	14	11.1	8.3
Enseignement individualisé (chaque étudiant travaille à son propre rythme; par exemple, enseignement programme, modules d'apprentissage)	12	86	2	14	-	-	-	-	-	-	-	-	-	-	-	-	14	1.1	2.9
Jeux, simulations	9	64	5	36	-	-	-	-	-	-	-	-	-	-	-	-	14	2.1	3.7
Exposés d'étudiants (hors d'un séminaire)	5	36	8	57	1	7	-	-	-	-	-	-	-	-	-	-	14	4.1	4.2
Tests	-	-	14	100	-	-	-	-	-	-	-	-	-	-	-	-	14	6.1	1.6

TABLE 10.12 (Cont'd)

SECONDARY SCHOOL HISTOIRE YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	\bar{X}	S
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Recherches à la bibliothèque en vue de travaux pour la classe et non d'un travail individuel)	1	7	9	64	4	29	-	-	-	-	-	-	-	-	-	-	14	8.7	6.3
Techniques audio-visuelles (télévision, magnétophone, cinéma, radio, etc.)	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14	6.6	3.4
Excursions, visites de personnes invitées.	8	57	6	43	-	-	-	-	-	-	-	-	-	-	-	-	14	1.1	1.6

TABLE 10.13

SECONDARY SCHOOL HISTOIRE YEAR 5
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "DANS VOTRE COURS, LES ETUDIANTS UTILISENT-ILS
 LE MATERIEL DECRIT CI-APRES?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	P	%	
Manuel de base	1	7	5	36	7	50	1	7	-	-	14
Manuel de base et manuel(s) supplémentaire(s)	4	29	6	43	2	14	1	7	1	7	14
Deux manuels de base ou plus de deux, ou des extraits d'autres manuels	5	36	4	29	1	7	1	7	3	21	14
Livres de référence, dictionnaires, encyclopédies, etc.	4	29	5	35	4	29	1	7	-	-	14
Documents, publications, revues savantes	6	43	7	50	1	7	-	-	-	-	14
Enseignement par modules	-	-	4	29	2	14	8	57	-	-	14
Autre matériel de classe (revues, journaux, brochures, etc.)	2	14	8	57	4	29	-	-	-	-	14
Media audio-visuels (télévision, magnétophone, cinéma, etc.)	-	-	6	43	8	57	-	-	-	-	14
Documents photocopiés (notes de cours et autres documents)	8	57	5	36	1	7	-	-	-	-	14
Autre matériel	-	-	2	100	-	-	-	-	-	-	2

TABLE 10.14

SECONDARY SCHOOL HISTOIRE
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "A COMBIEN ESTIMEZ-VOUS LE NOMBRE D'HEURES QUE VOS ETUDIANTS
 CONSACRENT A VOTRE COURS EN DEHORS DES HEURES DE CLASSE?"

	L'AN 5	
	N	%
0%*	-	-
1-25%	1	8
26-50%	5	42
51-75%	-	-
76-100%	5	42
101-150%	-	-
151-200%	1	8
201+%	-	-
Total	12	100

*La base pour ce pourcentage était les heures accordées au travail en classe. Par exemple, pour deux heures de travail hors de la classe, en rapport avec une heure en classe, le chiffre sera 200.

TABLE 10.15

SECONDARY SCHOOL HISTOIRE
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "LES ETUDIANTS PEUVENT-ILS ETRE DISPENSES DE L'EXAMEN FINAL
 SELON LES RESULTATS OBTENUS EN COURS D'ANNEE?"

	L'AN 5	
	N	%
Oui	5	36
Non	4	28
Le cours ne comporte pas d'examen final	5	36
Total	14	100

TABLE 10.16

SECONDARY SCHOOL HISTOIRE
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "DANS QUELLE MESURE UTILISEZ-VOUS LE FRANCAIS COMME LANGUE
 D'ENSEIGNEMENT DANS VOTRE COURS?"

	L'AN 5	
	N	%
100%	11	79
90-99%	3	21
Total	14	100

TABLE 10.17

SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	6	46	2	15	2	15	1	8	2	15	-	-	-	-	-	-	13
Examens semestriels	4	33	-	-	4	33	2	17	1	8	1	8	-	-	-	-	12
Autres tests écrits	-	-	1	7	7	50	4	29	1	7	-	-	1	7	-	-	14
Autres tests oraux	8	67	3	25	1	8	-	-	-	-	-	-	-	-	-	-	12
Travaux écrits individuels (dissertations, rapports, compte rendus, etc.)	-	-	1	8	7	54	4	30	1	8	-	-	-	-	-	-	13
Travaux écrits de groupe ou d'équipe	2	19	8	72	1	9	-	-	-	-	-	-	-	-	-	-	11
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	1	8	9	75	2	17	-	-	-	-	-	-	-	-	-	-	12
Projets de groupe ou d'équipe	3	25	8	67	1	8	-	-	-	-	-	-	-	-	-	-	12
Participation en classe ou au laboratoire	4	33	7	58	1	8	-	-	-	-	-	-	-	-	-	-	12
Efforts	5	42	7	58	-	-	-	-	-	-	-	-	-	-	-	-	12
Présence	7	64	4	36	-	-	-	-	-	-	-	-	-	-	-	-	11

*Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 10.18

SECONDARY SCHOOL HISTOIRE YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"AFFECTEZ LES ITEMS DU CODE PROPOSE SELON L'IMPORTANCE QUE VOUS LEUR ACCORDEZ"

	IMPORTANCE CONSIDERABLE		IMPORTANCE MOYENNE		D'IMPORTANCE TRES PEU		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Acquérir un ensemble particulier de données historiques.	5	36	6	43	3	21	-	-	-	-	14
Développer les aptitudes nécessaires pour analyser et interpréter les données historiques.	11	79	3	21	-	-	-	-	-	-	14
Développer la capacité d'étudier un problème d'histoire d'après des perspectives diverses.	11	79	3	21	-	-	-	-	-	-	14
Examiner les questions historiques selon le contexte temporel.	5	36	8	57	-	-	-	-	1	7	14
Comprendre le rapport entre les événements historiques et les problèmes contemporains.	12	86	2	14	-	-	-	-	-	-	14
Apprendre à percevoir la complexité des questions historiques.	7	50	7	50	-	-	-	-	-	-	14
Apprendre à percevoir le rapport entre soi-même et la société.	6	43	7	50	1	7	-	-	-	-	14
Apprendre à percevoir l'interdépendance croissante des nations et des collectivités du monde moderne.	5	36	6	43	2	14	-	-	1	7	14
Apprécier son héritage culturel.	7	50	7	50	-	-	-	-	-	-	14
Apprendre à percevoir la diversité des cultures.	4	29	9	64	-	-	1	7	-	-	14
Développer les aptitudes nécessaires pour rédiger et présenter un travail écrit.	9	64	4	29	1	7	-	-	-	-	14
Développer les aptitudes nécessaires pour rédiger et présenter un travail oral.	3	22	9	64	2	14	-	-	-	-	14

TABLE 10.18 (Cont'd)
 SECONDARY SCHOOL HISTOIRE YEAR 5
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "AFFECTEZ LES ITEMS DU CODE PROPOSE SELON L'IMPORTANCE QUE VOUS LEUR ACCORDEZ"

	IMPORTANCE CONSIDERABLE		IMPORTANCE MOYENNE		D'IMPORTANCE TRES PEU		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Encourager un haut degré d'excellence dans les études.	6	43	5	36	2	14	1	7	-	-	14
Développer une attitude qui favorise l'évaluation critique de nouvelles données.	9	64	3	22	1	7	-	-	1	7	14
Apprendre à percevoir les approches utilisées dans les disciplines connexes (par ex., l'économie, la science politique, la sociologie).	5	36	6	43	2	14	1	7	-	-	14
Accroître l'intérêt de l'étudiant pour l'histoire.	7	50	6	43	-	-	-	-	1	7	14
Développer:											
• le respect et la tolérance pour des opinions et idées diverses;	9	64	5	36	-	-	-	-	-	-	14
• l'indépendance; le sens des responsabilités;	6	43	8	57	-	-	-	-	-	-	14
• la confiance en soi;	7	50	6	43	-	-	-	-	1	7	14
• la conscience sociale (souci pour les autres)	10	71	4	29	-	-	-	-	-	-	14
• les qualités sociales (l'aptitude à travailler et à avoir des rapports avec les autres).	7	50	7	50	-	-	-	-	-	-	14

TABLE 10.19
SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ LA PRINCIPALE APPROCHE QUE VOUS UTILISEZ
DANS L'ORGANISATION DE VOTRE COURS"

	N	%
Thématique (par ex., la constitution des nations, les révolutions, les grands chefs)	5	36
Chronologique	3	21
Par période ou ère (par ex., la Renaissance)	5	36
Par pays	-	-
Par problème	1	7
Autre approche	-	-
Total	14	100

TABLE 10.20
SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EVALUEZ LA PROPORTION DU COURS CONSACREE A CHAQUE ASPECT ETUDIE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Aspect social	-	-	2	14	4	29	7	50	-	-	1	7	-	-	-	-	14
Aspect économique	-	-	2	14	3	22	7	50	2	14	-	-	-	-	-	-	14
Aspect politique	-	-	-	-	-	-	6	43	5	36	2	14	1	7	-	-	14
Aspect culturel	-	-	7	50	6	43	1	7	-	-	-	-	-	-	-	-	14
Autres aspect	13	93	-	-	1	7	-	-	-	-	-	-	-	-	-	-	14

TABLE 10.23

SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJECTIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION ^b	
		A \bar{x} ^a	L' ENTREE s	A LA SORTIE \bar{x}	A L' ENTREE s	A LA SORTIE \bar{x}	s	%	%
Recherche									
Utilisent efficacement les bibliothèques (catalogues sur fiches, ouvrages de référence, encyclopédies, etc.)	100	1.3	.6	2.6	.6	2.3	.5	3.5	.5
93									
Trouvent les références historiques (archives, registres des gouvernements, etc.)	79	.5	.5	1.6	.9	1.5	.9	2.5	1.3
79									
Utilisent efficacement les références historiques	86	1.1	1.0	2.4	.8	2.3	.6	3.6	.5
86									
Font la distinction entre les sources principales et secondaires.	86	.9	.9	1.9	.9	2.1	.9	3.1	1.0
86									
Rédaction									
Manifestent de la facilité pour planifier et organiser les travaux de rédaction.	93	1.1	.7	2.4	.7	2.4	.6	3.4	.5
93									
Emploient la prose claire et concise nécessaire pour présenter des idées par écrit (dissertations, rapports).	86	.9	.5	2.0	.7	2.4	.5	3.3	.5
86									
100									

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de zéro (aucune compétence) à 4 (Maîtrise, niveau élevé de compétence, situation de créativité). Voyez le questionnaire d'histoire, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 10.23 (Cont'd)
SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJETIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION	
		A	L'ENTREE	A	LA SORTIE	A	L'ENTREE	A	LA SORTIE	X	S
Emploient des techniques efficaces de prise de notes	71	1.5	.9	2.2	.8	2.4	.7	3.3	.7		79
Utilisent la terminologie de l'histoire de façon appropriée (par ex. la Renaissance).	93	.8	.6	2.1	.6	2.2	.6	3.3	.5		100
Observent les règles touchant les mentions de reference (par ex. renvois, bibliogra- phie).	93	1.2	.8	2.6	1.6	3.1	1.0	3.6	.5		93
<u>Eloquence</u> Expliquent clairement les idées	86	1.0	.7	2.1	.7	2.1	.5	3.4	.6		93
Présentent efficacement un long argument	93	.9	.5	2.0	.6	2.1	.5	3.3	.6		100
Présentent un rapport préparé d'avance	79	1.1	.6	2.0	.9	2.2	.8	3.1	1.1		93
Dans un petit groupe, contri- buent efficacement à la discussion	64	1.4	.9	2.2	1.1	2.2	1.1	3.0	1.4		71
<u>Analyse et interpretation</u> Comprennent diverses sources historiques: .documents .monographies .textes	93 86 86	1.3 .9 1.4	.8 .9 .9	2.5 1.9 2.6	.9 1.1 .8	2.3 2.4 2.6	.8 2.4 .8	3.3 2.7 3.6	1.0 1.4 .5		79 64 93

TABLE 10.23 (Cont'd)

SECONDARY SCHOOL HISTOIRE YEAR 5
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJETIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT		
		A L'ENTREE X	S	A LA SORTIE X	S	A L'ENTREE X	S	A LA SORTIE X	S	DE LA PREPARATION %
Analysent le matériel lu: discernent la thèse ou l'argument principal	93	1.1	.6	2.1	.7	2.4	.5	3.4	.5	100
discernent les renseignements importants ou pertinents	86	1.1	.9	2.3	.9	2.4	.5	3.5	.5	93
Présentent un argument de façon efficace pour ce qui est de l'organisation, de la substance (faits à l'appui), et des conclusions logiques	93	.9	.5	2.1	.8	2.2	.4	3.4	.5	100
Font la distinction entre les renseignements essentiels et non essentiels	86	1.1	.6	2.1	.7	2.4	.5	3.6	.5	100
Font la distinction entre les faits et leur interprétation	86	1.2	.7	2.3	.8	2.4	.5	3.6	.5	93
Démontrent qu'ils comprennent les concepts fondamentaux de l'histoire	86	.8	.6	1.9	.7	2.1	.5	3.4	.5	100
Comparent et contrastent diverses interprétations d'événements historiques	86	.7	.6	1.9	.9	2.1	.8	3.2	1.1	93

TABLE 10.23 (Cont'd)
 SECONDARY SCHOOL HISTOIRE YEAR 5
 TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
 "NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

OBJETIFS SPECIFIQUES	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A L'ENTREE X	A LA SORTIE S	A LA SORTIE X	A L'ENTREE S	A LA SORTIE X	A LA SORTIE S	
Reconnaissent les opinions préconçues	79	.9	.8	1.9	1.0	2.1	1.0	86
Evaluent un argument à la lumière des preuves connues	93	.9	.8	2.1	1.1	2.1	.9	93
Définissent un problème d'histoire en évaluant les données appropriées	100	.9	.7	2.1	.8	2.1	.9	100
Evaluent les événements en se fondant sur leur contexte historique	100	.7	.7	2.0	.6	2.1	.6	100
Analysent les caractéristiques d'une période, d'un problème ou d'un thème particulier en histoire	93	1.0	.7	2.1	.7	2.1	.5	93
Utilisent les concepts et les données historiques pour comprendre les problèmes contemporains	86	.7	.6	1.8	.7	2.1	.6	100

TABLE 11.1
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																						TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	TOTAL	
Secondary school teaching	0	1	1	4	0	3	1	3	4	1	5	4	1	3	2	3	0	3	1	1	0	41	
Teaching this course (or its equivalent)	0	6	6	4	3	5	3	5	2	1	0	1	0	2	2	0	1	0	0	0	0	41	
Related professional (non-teaching) Experience	22	5	4	1	2	1	0	0	0	0	2	1	0	1	0	2	0	0	0	0	0	41	

TABLE 11.2
SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 3 GENERAL	
	N	%
No	30	73
Elementary	3	7
Community college	1	3
University	3	7
Other	1	3
More than one other	3	7
Total	41	100

TABLE 11.3
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	TOTAL
Secondary school teaching	1	0	5	3	1	2	2	3	6	4	3	3	3	3	1	2	1	2	1	0	4	50
Teaching this course (or its equivalent)	1	4	4	5	4	3	5	5	3	2	6	1	2	1	1	0	1	0	1	0	1	50
Related professional (non-teaching) Experience	34	4	4	2	2	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	0	50

TABLE 11.4
SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 3 ADVANCED	
	N	%
No	35	73
Elementary	2	4
Community college	3	7
University	4	8
Other	4	8
More than one other	0	0
Total	48	100

TABLE 11.5

SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																				TOTAL	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20+
Secondary school teaching	0	0	1	5	1	2	2	0	4	4	2	3	4	5	2	4	0	3	2	1	5	50
Teaching this course (or its equivalent)	0	2	7	3	1	4	4	3	8	5	2	4	1	2	0	1	1	2	0	0	0	50
Related professional (non-teaching) Experience	30	3	3	6	2	2	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	50

TABLE 11.6

SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 5	
	N	%
No	36	72
Elementary	3	6
Community college	3	6
University	4	8
Other	3	6
More than one other	1	2
Total	50	100

TABLE 11.7
SECONDARY SCHOOL PHYSICS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Doctorate	1	2	0	0	1	2
Master's	2	5	10	20	9	18
Honour Bachelor's (4 year)	25	61	27	56	28	56
Bachelor's	11	27	10	20	12	24
Post-Secondary Diploma	0	0	0	0	0	0
Other	2	5	2	4	0	0
Total	41	100	49	100	50	100

TABLE 11.8
SECONDARY SCHOOL PHYSICS
OSSTF/AEFO CERTIFICATION CATEGORY

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Category 1/A1	1	3	2	4	0	0
Category 2/A2	3	7	6	12	3	6
Category 3/A3	7	17	3	6	6	12
Category 4/A4	30	73	38	78	41	82
Total	41	100	49	100	50	100

TABLE 11.9
SECONDARY SCHOOL PHYSICS
TEACHERS' POSITION IN SCHOOL

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Principal	0	0	0	0	0	0
Vice-principal	0	0	0	0	0	0
Department Head	7	17	13	27	18	37
Assistant or Associate Head	7	17	6	12	10	20
Teacher	27	66	30	61	21	43
Other	0	0	0	0	0	0
Total	41	100	49	100	49	100

TABLE 11.10
SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Yes, it is my area	23	56	33	69	34	68
Yes, it is closely related	12	29	12	25	13	26
No	6	15	3	6	3	6
Total	41	100	48	100	50	100

TABLE 11.11
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not at all		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	14	35	21	53	3	7	2	5	40
Knowledge of subject of incoming students	12	30	12	30	7	18	9	22	40
Relationship between this course and others taken concurrently	8	19	17	42	12	29	4	10	41
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	5	12	14	34	17	42	5	12	41
Ontario Ministry of Education guidelines	10	24	13	32	11	27	7	17	41
Course outline assigned to you	17	42	11	28	5	12	7	18	40
Special interests or training you might have	9	22	19	46	11	27	2	5	41
Content and approach of principal text(s)	5	13	14	35	13	32	8	20	40
Staffing	10	28	1	3	3	9	21	60	35
Other	1	3	1	3	-	-	33	94	35

TABLE 11.12

SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	13	26	27	54	9	18	1	2	50
Knowledge of subject of incoming students	10	20	19	39	15	31	5	10	49
Relationship between this course and others taken concurrently	5	10	23	46	14	28	8	16	50
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	12	24	16	32	17	34	5	10	50
Ontario Ministry of Education guidelines	22	44	16	32	7	14	5	10	50
Course outline assigned to you	19	44	15	35	3	7	6	14	43
Special interests or training you might have	13	26	15	30	19	38	3	6	50
Content and approach of principal text(s)	10	20	16	33	16	33	7	14	49
Staffing	3	7	6	15	3	7	29	71	41
Other	4	11	2	5	-	-	32	84	38

TABLE 11.13
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great		Moderate		Small		Not At		TOTAL
	N	%	Extent	N	Extent	N	All	%	
Interests of students	8	16	27	54	14	28	1	2	50
Knowledge of subject of incoming students	14	28	24	43	8	16	4	8	50
Relationship between this course and others taken concurrently	6	12	19	38	20	40	5	10	50
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	15	30	13	26	14	28	8	16	50
Ontario Ministry of Education guide-lines	29	58	13	26	2	4	6	12	50
Course outline assigned to you	18	43	8	19	1	2	15	36	42
Special interests or training you might have	8	16	21	42	19	38	2	4	50
Content and approach of principal text(s)	20	40	22	44	6	12	2	4	50
Staffing	5	12	3	7	4	9	31	72	43
Other	5	12	1	2	-	-	38	86	44

TABLE 11.14

SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Yes	24	58	41	82	47	94
No	17	42	9	18	3	6
Total	41	100	50	100	50	100

TABLE 11.15

SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Excellent	-	-	1	2	2	4
Good	8	21	31	62	32	67
Fair	27	69	16	32	14	29
Poor	4	10	2	4	-	-
Total	39	100	50	100	48	100

TABLE 11.16

SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION
IN COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
A great deal	24	59	25	50	31	62
A moderate amount	17	41	21	42	18	36
Very little	-	-	4	8	1	2
Do not know	-	-	-	-	-	-
Total	41	100	50	100	50	100

TABLE 11.17

SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Great extent	3	7	1	2	-	-
Moderate extent	2	5	1	2	1	2
Small extent	5	12	7	14	7	14
Not at all	31	76	41	82	42	84
Total	41	100	50	100	50	100

TABLE 11.18

SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	12	29	17	42	7	17	2	5	2	5	1	2	-	-	-	-	41	10.3	11.7
Socratic (question and answer technique, interaction between students and instructor)	2	5	7	17	12	29	9	22	4	10	6	15	1	2	-	-	41	24.8	14.2
Demonstrations	2	5	33	80	6	15	-	-	-	-	-	-	-	-	-	-	41	11.0	4.0
Laboratory work, experiments	1	2	7	17	16	39	11	27	3	8	2	5	1	2	-	-	41	22.1	12.7
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor, including library or resource centre activity)	5	12	23	56	9	22	4	10	-	-	-	-	-	-	-	-	41	11.0	8.5
Individualized instruction (each student proceeds at his own speed; e.g. programmed learning, learning modules)	32	78	7	18	1	2	1	2	-	-	-	-	-	-	-	-	41	3.4	12.5
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	36	88	5	12	-	-	-	-	-	-	-	-	-	-	-	-	41	0.6	1.7
Small group activities (with the instructor supervising a number of small groups at the same time)	24	59	14	34	3	7	-	-	-	-	-	-	-	-	-	-	41	3.6	5.2
Student presentations (exclusive of seminars, tutorials)	36	88	5	12	-	-	-	-	-	-	-	-	-	-	-	-	41	0.6	1.8
Testing	-	-	33	80	8	20	-	-	-	-	-	-	-	-	-	-	41	8.5	3.9

TABLE 11.19

SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	8	16	22	44	14	28	3	6	3	6	-	-	-	-	-	-	50	12.1	10.1
Socratic (question and answer technique interaction between students and instructor)	1	2	7	14	15	30	11	22	7	14	5	10	4	8	-	-	50	27.9	14.7
Demonstrations	1	2	37	74	11	22	1	2	-	-	-	-	-	-	-	-	50	12.0	5.0
Laboratory work, experiments	1	2	11	22	20	40	10	20	5	10	3	6	-	-	-	-	50	20.3	11.7
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor, including library or resource centre activity)	3	6	31	62	15	30	-	-	1	2	-	-	-	-	-	-	50	10.4	7.3
Individualized instruction (each student proceeds at his own speed; e.g. programmed learning, learning modules)	39	78	8	16	2	4	-	-	-	-	-	-	-	-	1	2	50	3.2	11.6
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	45	90	5	10	-	-	-	-	-	-	-	-	-	-	-	-	50	0.5	1.7
Small group activities (with the instructor supervising a number of small groups at the same time)	34	68	15	30	1	2	-	-	-	-	-	-	-	-	-	-	50	2.7	4.5
Student presentations (exclusive of seminars, tutorials)	41	82	9	18	-	-	-	-	-	-	-	-	-	-	-	-	50	0.8	2.0
Testing	-	-	45	90	5	10	-	-	-	-	-	-	-	-	-	-	50	8.4	3.1
Audiovisual (television, tapes, films, radio, etc.)	7	14	42	84	1	2	-	-	-	-	-	-	-	-	-	-	50	3.9	2.9
Field trips, visits by resource personnel	42	84	8	16	-	-	-	-	-	-	-	-	-	-	-	-	50	0.4	1.1
Other	49	98	1	2	-	-	-	-	-	-	-	-	-	-	-	-	50	0.1	0.3

TABLE 11.20
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	10	20	18	36	9	18	7	14	4	8	1	2	1	2	-	-	50	15.3	14.3
Socratic (question and answer technique, interaction between students and instructor)	1	2	5	10	8	16	14	28	11	22	5	10	6	12	-	-	50	31.8	16.0
Demonstrations	2	4	46	92	2	4	-	-	-	-	-	-	-	-	-	-	50	10.0	3.0
Laboratory work, experiments	-	-	17	34	15	30	13	26	5	10	-	-	-	-	-	-	50	18.3	9.1
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor, including library or resource centre activity)	8	16	25	50	12	24	4	8	1	2	-	-	-	-	-	-	50	10.2	8.5
Individualized instruction (each student proceeds at his own speed; e.g., programmed learning, learning modules)	45	90	3	6	2	4	-	-	-	-	-	-	-	-	-	-	50	1.1	3.5
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	41	82	7	14	2	4	-	-	-	-	-	-	-	-	-	-	50	1.4	3.8
Small group activities (with the instructor supervising a number of small groups at the same time)	38	76	9	18	3	6	-	-	-	-	-	-	-	-	-	-	50	2.0	4.7
Student presentations (exclusive of seminars, tutorials)	38	76	12	24	-	-	-	-	-	-	-	-	-	-	-	-	50	1.1	2.3
Testing	1	-	47	94	2	4	-	-	-	-	-	-	-	-	-	-	50	7.5	3.0
Audiovisual (television, films, radio, etc.)	5	10	40	80	5	10	-	-	-	-	-	-	-	-	-	-	50	5.6	3.8

TABLE 11.20 (cont'd)

SECONDARY SCHOOL PHYSICS YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO

EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Field trips, visits by resource personnel	40	80	10	20	-	-	-	-	-	-	-	-	-	-	-	-	50	0.4	0.9
Other	50	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	0.0	0.0

TABLE 11.21
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent			Moderate Extent			Small Extent			Not At All			TOTAL
	N	%		N	%		N	%		N	%		
Main text	12	31		14	36		7	18		6	15		39
Main text plus supplementary text(s)	2	5		6	15		16	40		16	40		40
Two or more main texts or materials from other texts	2	5		5	13		7	17		26	65		40
Reference books, dictionaries, encyclopedias, etc.	1	3		4	10		20	51		14	36		39
Documents, journals and scholarly reviews	-	-		2	5		8	21		29	74		39
Individualized learning packages	3	8		2	5		6	15		28	72		39
Other classroom resources (magazines, information kits, newspapers, etc.)	1	3		3	8		19	47		17	42		40
Audiovisual media (television, tapes, film strips, etc.)	3	7		14	34		17	42		7	17		41
Mimeographed materials (lecture notes, etc.)	11	27		16	39		12	29		2	5		41
Other	-	-		1	3		1	3		38	94		40

TABLE 11.22
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent			Moderate Extent			Small Extent			Not At All			TOTAL
	N	%		N	%		N	%		N	%		
Main text	23	47		19	39		6	12		1	2		49
Main text plus supplementary text(s)	6	13		12	25		13	27		17	35		48
Two or more main texts or materials from other texts	3	6		8	17		9	19		27	58		47
Reference books, dictionaries, encyclopedias, etc.	1	2		4	8		32	64		13	26		50
Documents, journals and scholarly reviews	-	-		-	-		14	29		35	71		49
Individualized learning packages	2	4		6	12		6	12		35	72		49
Other classroom resources (magazines, information kits, newspapers, etc.)	-	-		2	4		22	44		26	52		50
Audiovisual media (television, tapes, film strips, etc.)	2	4		12	24		30	60		6	12		50
Mimeographed materials (lecture notes, etc.)	15	31		15	31		16	32		3	6		49
Other	2	4		2	4		1	3		41	89		41

TABLE 11.23
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	30	60	18	36	2	4	-	-	50
Main text plus supplementary text(s)	3	6	16	34	16	34	12	26	47
Two or more main texts or materials from other texts	3	6	4	8	12	26	28	60	47
Reference books, dictionaries, encyclopedias, etc.	-	-	5	10	35	70	10	20	50
Documents, journals and scholarly reviews	-	-	2	4	17	34	31	62	50
Individualized learning packages	1	2	-	-	7	15	40	83	48
Other classroom resources (magazines, information kits, newspapers, etc.)	-	-	2	4	24	49	23	47	49
Audiovisual media (television, tapes, film strips, etc.)	5	10	18	36	22	44	5	10	50
Mimeographed materials (lecture notes, etc.)	14	28	9	18	15	30	12	24	50
Other	2	4	1	2	3	6	44	88	50

TABLE 11.24

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SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HOW MUCH TIME IS NORMALLY SPENT ON
REVIEW OF MATERIAL TAKEN PRIOR TO THIS COURSE?"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
0%	5	12	7	14	2	4
1-10%	25	61	32	64	36	72
11-20%	6	15	9	18	10	20
21-30%	3	8	-	-	2	4
31-40%	1	2	1	2	-	-
41-50%	1	2	1	2	-	-
51-75%	-	-	-	-	-	-
76+%	-	-	-	-	-	-
Total	41	100	50	100	50	100

TABLE 11.25

SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
0%*	3	7	-	-	1	2
1-25%	19	46	8	16	1	2
26-50%	16	39	21	42	10	20
51-75%	1	3	6	12	8	16
76-100%	2	5	14	28	22	44
101-150%	-	-	1	2	5	10
151-200%	-	-	-	-	3	6
201%+	-	-	-	-	-	-
Total	41	100	50	100	50	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200

TABLE 11.26

SECONDARY SCHOOL PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 3 GENERAL		YEAR 3 ADVANCED		YEAR 5	
	N	%	N	%	N	%
Yes	29	71	34	70	34	68
No	8	19	11	22	13	26
Not applicable	4	10	4	8	3	6
Total	41	100	49	100	50	100

TABLE 11.27
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Final examination*	-	-	-	-	1	17	3	50	2	33	-	-	-	-	-	-	29.7	7.0
Mid-term examination	6	14	2	5	9	22	11	27	9	22	4	10	-	-	-	-	23.9	15.0
Other written tests	2	5	3	8	8	19	8	19	10	25	8	19	2	5	-	-	30.7	15.0
Other oral tests	38	93	3	7	-	-	-	-	-	-	-	-	-	-	-	-	0.5	1.7
Problems, exercises	9	22	21	51	8	20	3	7	-	-	-	-	-	-	-	-	8.7	7.4
Laboratory reports and/or notebooks	6	15	17	42	13	32	3	7	1	2	-	-	1	2	-	-	13.6	11.9
Laboratory and/or other class participation	16	39	15	37	7	17	2	5	-	-	1	2	-	-	-	-	7.0	9.5
Individual papers (essays, reports, etc.)	26	63	11	27	3	7	1	3	-	-	-	-	-	-	-	-	3.3	6.0
Group or team papers, projects	35	85	5	12	1	3	-	-	-	-	-	-	-	-	-	-	1.3	3.3
Individual projects (exclusive of essays, reports)	32	78	6	15	2	5	1	2	-	-	-	-	-	-	-	-	2.5	6.0
Effort	26	63	13	32	2	5	-	-	-	-	-	-	-	-	-	-	1.9	3.2
Attendance	35	85	6	15	-	-	-	-	-	-	-	-	-	-	-	-	0.5	1.4
Other	39	96	1	2	-	-	-	-	-	-	1	2	-	-	-	-	1.3	7.7

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 11.28

SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	-	-	1	10	4	40	4	40	1	10	-	-	-	-	10	33.4	8.8
Mid-term examination	8	16	3	6	10	20	10	20	13	26	5	10	1	2	-	-	50	24.9	15.8
Other written tests	1	2	-	-	9	18	8	16	19	38	6	12	6	12	1	2	50	36.3	15.5
Other oral tests	46	92	4	8	-	-	-	-	-	-	-	-	-	-	-	-	50	0.5	1.6
Problems, exercises	17	34	23	46	9	18	1	2	-	-	-	-	-	-	-	-	50	6.1	6.1
Laboratory reports and/or notebooks	10	20	15	30	14	28	9	18	-	-	2	4	-	-	-	-	50	13.8	11.3
Laboratory and/or other class participation	31	62	14	28	4	8	-	-	1	2	-	-	-	-	-	-	50	3.9	6.6
Individual papers (essays, reports, etc.)	31	62	16	32	2	4	1	2	-	-	-	-	-	-	-	-	50	3.0	4.9
Group or team papers, projects	42	84	8	16	-	-	-	-	-	-	-	-	-	-	-	-	50	0.8	2.2
Individual projects (exclusive of essays, reports)	45	90	4	8	1	2	-	-	-	-	-	-	-	-	-	-	50	0.7	2.6
Effort	39	78	10	20	1	2	-	-	-	-	-	-	-	-	-	-	50	1.4	3.0
Attendance	46	92	4	8	-	-	-	-	-	-	-	-	-	-	-	-	50	0.3	1.2
Other	48	96	1	2	-	-	-	-	1	2	-	-	-	-	-	-	50	1.0	5.7

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 11.29
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76%+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	-	-	2	17	4	33	4	33	2	17	-	-	-	-	12	32.8	11.0
Mid-term examination	9	18	2	4	14	28	10	20	11	22	4	8	-	-	-	-	50	22.1	14.4
Other written tests	2	4	1	2	2	4	15	30	12	24	8	16	10	20	-	-	50	37.7	17.0
Other oral tests	48	96	2	4	-	-	-	-	-	-	-	-	-	-	-	-	50	0.2	1.1
Problems, exercises	21	42	19	38	9	18	-	-	1	2	-	-	-	-	-	-	50	6.4	7.8
Laboratory reports and/or notebooks	9	18	12	24	22	44	4	8	2	4	1	2	-	-	-	-	50	14.0	10.1
Laboratory and/or other class participation	31	62	11	22	6	12	2	4	-	-	-	-	-	-	-	-	50	4.3	6.8
Individual papers (essays, reports, etc)	37	74	13	26	-	-	-	-	-	-	-	-	-	-	-	-	50	1.6	3.0
Group or team papers, projects	47	94	3	6	-	-	-	-	-	-	-	-	-	-	-	-	50	0.4	1.4
Individual projects (exclusive of essays, reports)	44	88	3	6	3	6	-	-	-	-	-	-	-	-	-	-	50	1.2	3.5
Effort	39	78	11	22	-	-	-	-	-	-	-	-	-	-	-	-	50	1.4	3.0
Attendance	45	90	5	10	-	-	-	-	-	-	-	-	-	-	-	-	50	0.3	1.2
Other	46	92	4	8	-	-	-	-	-	-	-	-	-	-	-	-	50	0.5	1.8

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 11.30

SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
The student should acquire an attitude of scientific curiosity	11	27	25	61	5	12	-	-	41	2.1	0.6
The student should be able to think rationally and in particular be able to:											
organize data presented in a problem	24	58	15	37	2	5	-	-	41	2.5	0.6
and arrive at a solution											
evaluate in empirical terms reports of observed phenomena	7	17	23	56	10	24	1	3	41	1.9	0.7
The student should understand the scientific method	10	24	21	51	9	22	1	3	41	2.0	0.7
The student should be able to apply the scientific method to the study of the behaviour of matter under the influence of the forces of nature and to the study of the properties of those forces including:											
the ability to design and set up an experiment	9	23	14	35	12	30	5	12	40	1.7	1.0
the ability to collect experimental data	16	39	21	51	3	7	1	3	41	2.3	0.7
the ability to organize and analyze experimental data	16	39	20	49	4	10	1	2	41	2.2	0.7
the ability to interpret the results of experiments in terms of mathematics and/or physical models	9	22	20	49	12	29	-	-	41	1.9	0.7
the ability to communicate the results of experiments concisely, critically and profitably with knowledge and understanding	16	39	18	44	7	17	-	-	41	2.2	0.7

TABLE 11.31

SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
The student should acquire an attitude of scientific curiosity	18	36	29	58	2	4	1	2	50	2.3	0.6
The student should be able to think rationally and in particular be able to:											
.organize data presented in a problem and arrive at a solution	44	88	5	10	1	2	-	-	50	2.9	0.4
.evaluate in empirical terms reports of observed phenomena	20	40	20	40	8	16	2	4	50	2.2	0.8
The student should understand the scientific method	15	30	25	50	8	16	2	4	50	2.1	0.8
The student should be able to apply the scientific method to the study of the behaviour of matter under the influence of the forces of nature and to the study of the properties of those forces including:											
.the ability to design and set up an experiment	7	14	21	42	21	42	1	2	50	1.7	0.7
.the ability to collect experimental data	23	46	20	40	7	14	-	-	50	2.3	0.7
.the ability to organize and analyze experimental data	25	50	20	40	5	10	-	-	50	2.4	0.7
.the ability to interpret the results of experiments in terms of mathematics and/or physical models	27	54	19	38	3	6	1	2	50	2.4	0.7
.the ability to communicate the results of experiments concisely, critically and profitably with knowledge and understanding	28	56	13	36	3	6	1	2	50	2.5	0.7

TABLE 11.32

SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
The student should acquire an attitude of scientific curiosity	23	46	23	46	4	8	-	-	50	2.4	0.6
The student should be able to think rationally and in particular be able to:											
organize data presented in a problem	48	96	2	4	-	-	-	-	50	3.0	0.2
and arrive at a solution											
evaluate in empirical terms reports of observed phenomena	22	44	19	38	7	14	2	4	50	2.2	0.8
The student should understand the scientific method	17	35	25	51	5	10	2	4	49	2.2	0.8
The student should be able to apply the scientific method to the study of the behaviour of matter under the influence of the forces of nature and to the study of the properties of those forces including:											
the ability to design and set up an experiment	6	12	19	38	21	42	4	8	50	1.5	0.8
the ability to collect experimental data	23	46	23	46	4	8	-	-	50	2.4	0.6
the ability to organize and analyze experimental data	33	66	16	32	1	2	-	-	50	2.6	0.5
the ability to interpret the results of experiments in terms of mathematics and/or physical models	34	63	13	26	3	6	-	-	50	2.6	0.6
the ability to communicate the results of experiments concisely, critically and profitably with knowledge and understanding	29	58	19	38	2	4	-	-	50	2.5	0.6

TABLE 11.32 (cont'd)
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
The student should recognize technological and engineering activities as applications of the principles of physics and aim to understand these activities in such terms	13	26	19	38	14	28	4	8	50	1.8	0.9
The student should be aware of the historical development of ideas and concepts in physics and the evolving nature of its theories	7	14	29	58	13	26	1	2	50	1.8	0.7

TABLE 11.33
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Measurement	5	13	15	38	16	41	2	5	-	-	1	3	-	-	39	5.6	4.2
Functions	11	28	20	52	6	15	2	5	-	-	-	-	-	-	39	3.0	3.1
Motion (Kinematics)	5	13	18	46	9	23	7	18	-	-	-	-	-	-	39	6.4	4.4
Newton's Laws of Motion - Dynamics of a Particle	7	18	6	15	20	52	6	15	-	-	-	-	-	-	39	6.4	3.9
Statics	17	43	8	21	6	15	7	18	1	3	-	-	-	-	39	5.1	5.5
Newton's Laws of Motion - Dynamics of a Rigid Body	23	59	11	28	4	10	-	-	1	3	-	-	-	-	39	1.9	3.8
Gravity - Near the Earth's Surface	11	28	21	54	7	18	-	-	-	-	-	-	-	-	39	3.0	2.5
Universal Gravitation	18	46	19	48	1	3	1	3	-	-	-	-	-	-	39	1.7	2.6
Momentum	34	87	3	8	2	5	-	-	-	-	-	-	-	-	39	.6	1.9
Work, Energy and Power	7	18	7	18	16	41	7	18	2	5	-	-	-	-	39	7.2	4.8
Vibrations and Waves	11	28	7	18	12	31	7	18	2	5	-	-	-	-	39	5.9	5.3
How Light Behaves	9	23	1	3	5	13	11	28	8	20	2	5	3	8	39	12.2	9.8
Interference and Diffraction	16	41	11	28	8	20	3	8	1	3	-	-	-	-	39	3.9	4.5
Electricity and Magnetism	8	20	3	8	5	13	9	23	4	10	3	8	7	18	39	16.1	9.1
Atomic Structure	17	44	9	23	11	28	2	5	-	-	-	-	-	-	39	3.4	3.6
Nuclear Physics	19	49	7	18	8	20	2	5	2	5	1	3	-	-	39	4.1	5.7
Temperature and Heat	24	61	2	5	7	18	3	8	2	5	-	-	1	3	39	3.3	6.0
Properties of Solids other than Thermal	31	79	7	18	1	3	-	-	-	-	-	-	-	-	39	.6	1.6

TABLE 11.33 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%	1-5%	6-10%	11-15%	16-20%	21-25%	26+%	TOTAL	MEAN	S.D.
	N %	N %	N %	N %	N %	N %	N %			
Fluids at Rest and in Motion	17 44	4 10	11 28	4 10	3 8	-	-	39	4.6	5.4
Special Theory of Relativity	36 92	3 8	-	-	-	-	-	39	.1	.4
Properties of Elementary Particles	39 100	-	-	-	-	-	-	39	0	0
Other Topics	27 69	3 8	4 10	3 8	2 5	-	-	39	4.7	11.4

TABLE 11.34

SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Measurement	2	4	33	67	12	25	2	4	-	-	-	-	-	-	49	4.4	2.6
Functions	5	10	39	80	5	10	-	-	-	-	-	-	-	-	49	2.8	2.1
Motion (Kinematics)	2	4	6	12	30	62	5	10	4	8	1	2	1	2	49	9.4	5.8
Newton's Laws of Motion - Dynamics of a Particle	2	4	9	18	30	62	6	12	2	4	-	-	-	-	49	8.1	3.4
Statics	37	76	11	23	1	2	-	-	-	-	-	-	-	-	49	.9	1.8
Newton's Laws of Motion - Dynamics of a Rigid Body	30	61	19	39	-	-	-	-	-	-	-	-	-	-	49	.7	1.2
Gravity - Near the Earth's Surface	4	8	35	72	10	20	-	-	-	-	-	-	-	-	49	5.0	2.0
Universal Gravitation	10	20	35	72	2	4	-	-	1	2	-	-	1	2	49	2.7	4.5
Momentum	37	76	10	20	2	4	-	-	-	-	-	-	-	-	49	1.7	3.5
Work, Energy and Power	1	2	14	29	31	63	2	4	-	-	-	-	1	2	49	7.3	5.2
Vibrations and Waves	7	14	9	19	19	39	10	20	4	8	-	-	-	-	49	8.3	4.8
How Light Behaves	6	12	3	6	9	18	12	25	16	33	2	4	1	2	49	12.1	7.4
Interference and Diffraction	7	14	18	37	20	41	4	8	-	-	-	-	-	-	49	3.2	5.8
Electricity and Magnetism	7	14	2	4	4	8	8	16	11	23	6	12	11	23	49	17.1	10.8
Atomic Structure	17	35	17	35	15	30	-	-	-	-	-	-	-	-	49	3.2	3.0
Nuclear Physics	24	49	15	31	6	12	4	8	-	-	-	-	-	-	49	3.1	3.4
Temperature and Heat	42	86	3	6	4	8	-	-	-	-	-	-	-	-	49	.6	1.8
Properties of Solids other than Thermal	36	74	10	20	3	6	-	-	-	-	-	-	-	-	49	1.1	2.0

TABLE 11.34 (Cont'd)

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Fluids at Rest and in Motion	36	74	10	20	3	6	-	-	-	-	-	-	-	-	49	1.5	3.7
Special Theory of Relativity	39	80	10	20	-	-	-	-	-	-	-	-	-	-	49	.3	.5
Properties of Elementary Particles	45	92	4	8	-	-	-	-	-	-	-	-	-	-	49	.1	.3
Other Topics	36	74	8	16	3	6	2	4	-	-	-	-	-	-	49	5.1	4.3

TABLE 11.35

SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%	1-5%	6-10%	11-15%	16-20%	21-25%	26+%	TOTAL	MEAN	S.D.
	N %	N %	N %	N %	N %	N %	N %			
Measurement	6 12	35 70	9 18	- -	- -	- -	- -	50	3.2	2.2
Functions	2 4	37 74	11 22	- -	- -	- -	- -	50	3.6	2.1
Motion (Kinematics)	1 2	6 12	22 44	15 30	5 10	- -	1 2	50	10.2	4.3
Newton's Laws of Motion - Dynamics of a Particle	1 2	8 16	29 58	11 22	1 2	- -	- -	50	8.6	3.3
Statics	35 70	15 30	- -	- -	- -	- -	- -	50	.5	3.4
Newton's Laws of Motion - Dynamics of a Rigid Body	30 60	20 40	- -	- -	- -	- -	- -	50	.9	1.4
Gravity - Near the Earth's Surface	2 4	32 64	16 32	- -	- -	- -	- -	50	4.7	1.8
Universal Gravitation	2 4	30 60	18 36	- -	- -	- -	- -	50	4.7	1.9
Momentum	2 4	6 12	37 74	4 8	1 2	- -	- -	50	7.6	2.9
Work, Energy and Power	1 2	10 20	31 62	6 12	2 4	- -	- -	50	8.0	3.4
Vibrations and Waves	3 6	19 38	21 42	5 10	- -	- -	2 4	50	6.5	5.0
How Light Behaves	1 2	17 34	27 54	3 6	1 2	1 2	- -	50	7.4	3.6
Interference and Diffraction	- -	5 10	29 58	11 22	4 8	- -	1 2	50	9.6	4.3
Electricity and Magnetism	5 10	11 22	24 48	8 16	1 2	1 2	- -	50	7.1	4.5
Atomic Structure	6 12	3 6	21 42	14 28	6 12	- -	- -	50	9.0	5.1
Nuclear Physics	29 58	18 36	3 6	- -	- -	- -	- -	50	1.4	2.2
Temperature and Heat	48 96	2 4	- -	- -	- -	- -	- -	50	.1	.5
Properties of Solids other than Thermal	39 78	11 22	- -	- -	- -	- -	- -	50	.3	.8

TABLE 11.35 (Cont'd)

SECONDARY SCHOOL PHYSICS YEAR 5

TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -

PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Fluids at Rest and in Motion	49	98	1	2	-	-	-	-	-	-	-	-	-	-	50	.0	.2
Special Theory of Relativity	36	72	14	28	-	-	-	-	-	-	-	-	-	-	50	.4	.9
Properties of Elementary Particles	44	88	6	12	-	-	-	-	-	-	-	-	-	-	50	.1	.2
Other Topics	44	88	4	8	2	4	-	-	-	-	-	-	-	-	50	.4	1.5

TABLE 11.36
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
MEASUREMENT										
.Mass, length and time (fundamental quantities)	76	1.0	.7	2.0	.6	1.3	.7	2.2	.6	29
.Errors	59	.5	.6	1.4	.7	.9	.7	1.6	.8	32
.Accuracy and precision (significant figures, "rounding off")	68	.6	.7	1.6	.8	.9	.7	1.9	.8	27
.SI	71	.7	.6	1.7	.6	1.0	.8	1.9	.7	24
.Development of relations relating physical quantities by dimensional analysis	51	.2	.4	1.2	.9	.5	.6	1.3	.9	17
.Dimensional consistency of equations relating physical quantities	49	.2	.4	1.0	.8	.5	.5	1.3	.8	17
FUNCTIONS										
Given a table of experimental data:										
.Plotting and properly labelling a graph of the data	71	.8	.8	1.9	.7	1.3	.7	2.1	.7	37
.Writing the equation of a linear relation	39	.3	.4	1.2	1.0	.7	.6	1.5	1.1	22
.Replotting a non-linear relation to obtain a straight line and writing the relation	17	.1	.3	.6	.7	.2	.4	.8	.8	2
.Plotting a power law relation on log-log paper and writing the relation	0	.1	.3	.1	.3	.1	.3	.3	.5	0
.Plotting an exponential relation on semi-log paper and writing the relation	0	.1	.3	.1	.3	.1	.3	.1	.3	0
MOTION (Kinematics)										
.Motion with constant acceleration in one, two, or three dimensions	73	.2	.5	1.8	.8	.5	.7	1.9	.8	22
.Straight line kinematics with uniform acceleration	80	.2	.5	1.9	.8	.5	.6	2.0	.8	24
.Straight line kinematics with non-uniform acceleration	29	.1	.3	.8	1.0	.2	.5	1.0	1.1	7
.Two-dimensional kinematics with uniform acceleration (e.g., projectile motion)	32	.1	.3	.8	.8	.3	.6	1.0	.9	10
.Two-dimensional kinematics with non-uniform acceleration (e.g., circular motion)	20	.0	.0	.5	.7	.1	.3	.7	.9	5
.Three-dimensional kinematics with uniform acceleration	2	.0	.0	.1	.2	.0	.0	.1	.4	0
.Three-dimensional kinematics with non-uniform acceleration	0	.0	.0	.0	.0	.0	.0	.1	.3	0

^aThe means in this table are based on a response key which ranges from 0-indicating No Knowledge to 4-Advanced. See physics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 11.36 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
NEWTON'S LAWS OF MOTION - DYNAMICS OF A PARTICLE										
.Newton's first law, mass and inertia	85	.1	.4	1.8	.8	.5	.6	1.9	.8	27
.Newton's second law	83	.1	.3	2.0	.8	.4	.5	2.0	.8	22
.Newton's third law	80	.1	.3	1.6	.8	.4	.6	1.7	.8	22
.Resolution and summation of forces by scale drawing	61	.1	.3	1.7	1.0	.3	.5	1.8	.8	15
.Resolution and summation of forces by analytical methods	20	.1	.3	.8	.9	.3	.5	.9	1.0	5
.Frames of reference	34	.0	.0	.8	.8	.1	.3	.9	.9	5
.Pseudo forces	5	.1	.2	.2	.6	.1	.3	.3	.6	0
.Dynamics of circular motion	15	.1	.2	.5	.7	.2	.4	.6	.8	5
STATICS										
.Moments	39	.1	.3	1.4	1.1	.3	.5	1.6	1.1	5
.Laws of equilibrium	37	.2	.5	1.4	1.1	.4	.6	1.6	1.1	10
.Simple machines, the lever, the incline plane, pulleys	46	.3	.6	1.6	1.0	.6	.6	1.8	1.1	12
NEWTON'S LAWS OF MOTION - DYNAMICS OF A RIGID BODY										
.Translational motion	27	.2	.4	1.0	.9	.4	.5	1.2	1.1	7
.Rotational motion, torque, moment of inertia, angular acceleration	15	.2	.6	.6	.7	.3	.6	.8	1.0	2
.Combined translational and rotational motion	10	.1	.4	.4	.8	.2	.6	.5	.9	2
.Friction	34	.6	.7	1.2	.8	.7	.7	1.4	.9	7
GRAVITY -NEAR THE EARTH'S SURFACE										
.Distinction between gravitational and inertial mass; principle of equivalence	41	.2	.4	1.1	.9	.4	.6	1.3	1.0	12
.Weight and acceleration due to gravity	76	.2	.4	1.7	.8	.6	.6	2.0	.8	22
.The dynamics of projectile motion (no air resistance)	29	.1	.3	.9	.9	.2	.4	1.2	1.1	5
.The dynamics of projectile motion (air resistance)	12	.1	.3	.4	.5	.1	.4	.7	1.0	2
.Dependence of g on distance from centre of earth or on latitude	49	.0	.2	1.2	.8	.2	.4	1.3	.8	10

TABLE 11.36 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
UNIVERSAL GRAVITATION										
.Ptolemy, Copernicus, Kepler	5	.0	.0	.2	.4	.0	.0	.1	.4	0
.Kepler's Laws	5	.1	.3	.3	.5	.1	.4	.3	.5	0
.Universal law of gravitation	46	.1	.2	1.3	.7	.2	.4	1.5	.8	7
.Circular orbits	10	.1	.4	.5	.7	.2	.4	.6	.7	0
.General motion under a central force	10	.1	.3	.5	.5	.1	.3	.4	.5	0
MOMENTUM										
.Impulse and momentum	10	.0	.0	.6	.8	.0	.0	.8	.9	0
.Conservation of linear momentum	7	.0	.0	.6	.9	.0	.0	.7	1.0	0
.Elastic collisions (in one dimension)	5	.0	.0	.2	.4	.0	.0	.3	.5	0
.Inelastic collisions (in one dimension)	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Collisions of bodies in two dimensions	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Angular momentum	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Conservation of angular momentum	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Precession	0	.0	.0	.0	.0	.0	.0	.0	.0	0
WORK, ENERGY AND POWER										
.Work done by a constant force	85	.3	.5	1.9	.7	.6	.6	2.0	.7	27
.Work done by a non-constant force (e.g., $F=kx$)	22	.1	.3	.7	.8	.3	.5	1.0	1.0	10
.Work done by a non-constant force (e.g., $F=1/r^2$)	7	.1	.2	.3	.6	.1	.3	.4	.8	2
.Work performed by compressing a gas	10	.1	.2	.4	.8	.2	.4	.7	1.1	5
.Kinetic energy and its relation to the work	80	.2	.5	1.7	.8	.5	.6	1.9	.8	24
.Potential energy (constant force [$\underline{e.g., mgh}$])	78	.2	.4	1.7	.8	.5	.5	1.9	.8	22
.Potential energy (non-constant force [$\underline{e.g., \frac{1}{2}kx^2}$ or $\frac{Gm_1m_2}{r}$])	20	.1	.2	.6	.8	.2	.4	.8	1.0	5
.Conservation of mechanical energy (transformations between kinetic and potential energy)	78	.2	.4	1.7	.7	.5	.6	1.9	.7	22
.Power	83	.2	.5	1.9	.7	.5	.6	2.0	.7	24
.Efficiency of work	63	.1	.3	1.4	1.0	.4	.6	1.6	1.0	24

TABLE 11.36 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	ENTRY	S.D.	MEAN	S.D.	
VIBRATIONS AND WAVES										
.Vibrations	63	.3	.4	1.7	.8	.7	.8	1.9	.8	20
.Kinematic description of SHM, ($y = A \sin \omega t$ or reference circle)	2	.1	.3	.1	.4	.1	.3	.3	.5	0
.Motion under a harmonic force ($F = -kx$)	2	.0	.0	.2	.6	.1	.3	.2	.6	2
.Solutions of the equation of motion for an oscillating system (Newton's second law)	2	.0	.0	.1	.3	.0	.0	.1	.3	0
.Mass on a spring	27	.1	.2	.9	.9	.4	.9	1.1	1.0	10
.Simple pendulum (in small angle approximation)	34	.2	.4	1.2	.9	.6	.8	1.3	.9	12
.Rigid pendulum (in small angle approximation)	5	.1	.3	.3	.8	.1	.3	.3	.9	0
.Torsional oscillations	0	.1	.3	.1	.3	.1	.3	.2	.4	0
.Conservation of energy in undamped oscillations	5	.0	.0	.1	.4	.1	.3	.3	.6	2
.Exponential decay of oscillations	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Derivation of the differential wave equation for compressional waves in a gas or transverse waves on a string	5	.0	.0	.2	.6	.2	.4	.3	.6	5
.Relation between frequency, wavelength and velocity ($v = f\lambda$)	66	.1	.4	1.9	.6	.4	.8	2.0	.6	15
.Waves propagated in one dimension	63	.1	.5	1.5	.7	.5	.8	1.7	.7	20
.Waves propagated in two dimensions	46	.2	.5	1.2	.7	.5	.8	1.3	.8	12
.Polarization	12	.0	.0	.4	.6	.3	.9	.5	.7	5
.Doppler effect	32	.0	.0	.9	.7	.3	.8	1.1	.8	7
.Shock waves	20	.0	.0	.6	.6	.1	.3	.6	.7	2
.Energy carried by a wave in one dimension	34	.2	.5	1.0	.9	.5	.8	1.0	.9	10
.Relative and absolute intensity of sound waves (decibels)	29	.1	.2	.9	.8	.2	.5	.9	.8	5
.Energy radiated by a point source (inverse square law)	12	.0	.0	.4	.7	.2	.4	.5	.8	5
HOW LIGHT BEHAVES										
.Qualitative discussion of light sources	66	.4	.5	1.4	.7	.7	.6	1.6	.7	15
.Rectilinear propagation of light waves	66	.3	.5	1.4	.3	.6	.7	1.6	.8	17
.Concept of a wave front	41	.1	.3	1.0	.6	.5	.7	1.1	.7	12
.Huygens' principle	7	.1	.3	.3	.6	.2	.4	.3	.6	5
.Reflection of waves at a plane boundary	61	.4	.5	1.4	.9	.7	.8	1.7	.8	17
.Reflection of waves at a spherical boundary	44	.3	.5	1.2	.8	.3	.5	1.3	.9	2

TABLE 11.36 (cont'd)

SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
HOW LIGHT BEHAVES (Cont'd)										
.Convex and concave mirrors										
a) scale drawings	73	.2	.4	1.8	.7	.5	.7	1.9	.8	20
b) analytical treatment	37	.1	.3	1.1	.9	.5	.7	1.4	1.1	15
.Refraction of waves at a plane interface between two media	66	.1	.4	1.5	.7	.3	.5	1.7	.7	10
.Concept of refractive index (Snell's law)	66	.1	.3	1.6	.7	.4	.7	1.8	.7	15
.Total internal reflection	66	.1	.3	1.2	.6	.3	.7	1.4	.7	7
.Refraction by a prism	76	.2	.4	1.4	.7	.4	.7	1.6	.7	10
.Prism spectrometer - minimum deviation	15	.0	.0	.5	.7	.2	.8	.6	.8	2
.Dispersive power of a medium	15	.0	.0	.5	.6	.0	.0	.5	.7	0
.Refraction at a spherical interface	20	.2	.4	.8	.8	.2	.4	.8	.9	0
.The lensmaker's equation	10	.2	.6	.5	.8	.3	.8	.6	.9	2
.The thin lens equation	24	.1	.3	.9	.9	.3	.8	.9	.9	2
.Formation of images by lenses										
a) scale drawings	73	.1	.3	1.8	.6	.4	.7	1.9	.6	22
b) analytical treatment	44	.0	.2	1.2	.9	.4	.7	1.3	.9	17
.Power of a lens	27	.1	.2	.9	.8	.2	.4	1.1	.9	7
.Chromatic aberration	41	.0	.2	.9	.6	.0	.2	.8	.7	0
.Monochromatic aberrations	17	.1	.2	.5	.5	.1	.3	.6	.5	2
.The eye and the camera	68	.2	.4	1.6	.8	.5	.7	1.7	.8	17
.Eye defects and corrective lenses	68	.1	.3	1.5	.6	.4	.8	1.6	.7	10
.Simple and compound microscopes	46	.1	.3	1.2	.8	.4	.7	1.3	.9	10
.The telescope	51	.1	.3	1.2	.7	.4	.7	1.4	.8	12
INTERFERENCE AND DIFFRACTION										
.Superposition of pulses and/or waves	54	.2	.5	1.3	.7	.2	.4	1.6	.7	7
.Reflection and transmission of pulses and waves at a boundary	51	.0	.2	1.3	.8	.3	.7	1.5	.8	7
.Standing waves on a string, ends fixed	56	.0	.2	1.5	.7	.3	.7	1.7	.7	10
.Standing waves in a pipe, both ends open	37	.0	.0	1.6	.9	.3	.8	1.7	.8	7
.Standing waves in a pipe, one end open, one end closed	44	.0	.0	1.7	.7	.3	.8	1.7	.7	7

TABLE 11.36 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
INTERFERENCE AND DIFFRACTION (Cont'd)										
.Interference of periodic waves, two point sources in a two-dimensional medium	34	.1	.7	.9	.7	.5	1.0	1.0	.8	10
.Interference effects produced by a double slit (Young's double slit)	24	.1	.5	.6	.6	.2	.5	.5	.6	2
.Interference effects produced by a multiple slit	2	.0	.0	.1	.3	.1	.3	.2	.6	2
.Fraunhofer diffraction by a straight edge	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Fraunhofer diffraction by a single slit (single slit interference)	2	.0	.0	.1	.3	.0	.0	.1	.3	0
.Fraunhofer diffraction by a circular aperture	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Fraunhofer diffraction by a grating	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Rayleigh resolution criterion	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Resolving power of a grating	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Grating spectrometer	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Fresnel diffraction	2	.0	.0	.1	.3	.0	.0	.1	.3	0
.Interference effects in parallel thin films	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Michelson interferometer	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Interference effects in wedge-shaped thin films	0	.0	.0	.0	.0	.0	.0	.0	.0	0
ELECTRICITY AND MAGNETISM										
.Electrostatics	68	.6	.5	1.9	.7	1.0	.7	2.1	.7	24
.Electric force (Coulomb's law)	44	.2	.4	1.2	.9	.6	.8	1.4	.9	15
.Electric field	49	.2	.6	1.2	.7	.5	.3	1.3	.8	10
.Electric potential energy	51	.2	.6	1.4	.6	.5	.8	1.5	.7	10
.Electric potential difference - volt	68	.3	.6	1.7	.5	.6	.8	1.9	.6	17
.Sources of emf	61	.3	.5	1.3	.7	.6	.7	1.5	.8	15
.Millikan experiment	12	.0	.0	.3	.5	.0	.0	.4	.6	0
.Motion of a charge - ampere	61	.3	.5	1.6	.7	.5	.7	1.7	.8	7
.Ohm's Law - constant resistance	71	.2	.5	1.9	.7	.5	.8	2.0	.7	15
.Resistance of a conductor	71	.2	.5	1.8	.7	.5	.7	1.8	.7	12
.D.C. electric circuits	68	.3	.5	1.6	.8	.5	.6	1.8	.8	10
.Kirchhoff's Laws	15	.0	.0	.5	.8	.1	.3	.7	.9	5
.Capacitance	15	.0	.0	.4	.6	.1	.3	.6	.9	2

TABLE 11.36 (Cont'd)

SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

INSTRUCTORS			ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
TEACHING TOPIC	ENTRY	EXIT	ENTRY	S.D.	MEAN	ENTRY	S.D.	MEAN		EXIT
SPECIFIC OBJECTIVES	MEAN	S.D.	MEAN	S.D.	MEAN	MEAN	S.D.	MEAN	S.D.	STUDENTS
ELECTRICITY AND MAGNETISM (Cont'd)										
.Properties of dielectrics	5	.0	.0	.1	.3	.1	.3	.2	.6	2
.Transients (RC circuits)	2	.0	.0	.1	.3	.1	.3	.1	.3	2
.Electric power in DC circuits	59	.1	.3	1.6	.7	.4	.7	1.6	.8	12
.Magnetism	61	.6	.6	1.7	.7	.9	.7	1.8	.6	15
.Magnetic field	56	.4	.6	1.4	.7	.8	.8	1.6	.7	17
.Force on moving charge in a magnetic field	54	.1	.3	1.1	.7	.4	.8	1.4	.8	12
.Ratio of charge to mass of the electron	20	.0	.0	.4	.5	.1	.2	.4	.5	2
.Magnetic field produced by a moving charge	63	.1	.3	1.1	.7	.3	.4	1.3	.8	12
.Force on a current carrying conductor in a uniform magnetic field	66	.1	.3	1.3	.6	.3	.7	1.4	.6	10
.Electric meters - galvanometers	68	.1	.4	1.4	.7	.4	.7	1.5	.7	12
.Electric motors	63	.1	.4	1.2	.7	.4	.7	1.4	.8	15
.Emf in a conductor moving in a uniform magnetic field	51	.0	.2	1.1	.7	.3	.7	1.3	.9	12
.Lenz' law										
.Inductance	15	.0	.0	.3	.5	.1	.3	.4	.8	5
.AC generator	56	.1	.3	1.2	.7	.2	.4	1.3	.8	5
.DC generator	61	.1	.3	1.1	.7	.2	.4	1.3	.8	5
.AC circuits	24	.1	.5	.7	.9	.2	.5	.9	1.0	2
.Transformers	54	.1	.3	1.4	.9	.4	.7	1.5	.9	12
.Hysteresis	7	.0	.0	.2	.4	.1	.3	.3	.6	2
.Electromagnetic spectrum	39	.0	.2	.8	.5	.2	.4	1.0	.7	7
ATOMIC STRUCTURE										
.Thomson model of atom	37	.2	.4	1.0	.7	.3	.5	1.1	.6	5
.Rutherford scattering experiment	39	.2	.5	1.0	.6	.3	.6	1.1	.5	2
. "Solar system" model of atom (Rutherford model)	51	.3	.5	1.2	.6	.3	.6	1.3	.6	2
.Properties of electron	44	.4	.6	1.3	.7	.5	.7	1.3	.6	7
.Photoelectric effect (Photons)	32	.1	.2	.9	.7	.0	.0	.9	.7	0
.Compton effect	2	.0	.0	.1	.3	.0	.0	.1	.3	0
.Particle - wave duality of radiation	12	.0	.0	.4	.5	.0	.0	.4	.5	0
.Particle - wave duality of matter (de Broglie)	5	.0	.0	.2	.4	.0	.0	.2	.4	0

TABLE 11.36 (Cont'd)
 SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY MEAN	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN	
ATOMIC STRUCTURE (Cont'd)								
.Line spectra (historical evidence, Balmer series, etc.)	10	.0	.0	.3	.5	.0	.4	.5
.Discrete energy levels (Franck - Hertz experiment)	7	.0	.0	.2	.4	.0	.3	.5
.Energy levels of hydrogen (Bohr model)	10	.0	.0	.4	.6	.0	.4	.7
NUCLEAR PHYSICS								
.Radioactive decay	49	.1	.2	1.3	.7	.3	.4	.6
.Alpha, beta and gamma radiation; properties and spectra	46	.1	.2	1.2	.7	.3	.4	.7
.Detection of radiation	41	.1	.2	1.1	.7	.3	.5	.7
.Structure of the nucleus	39	.2	.4	1.1	.7	.3	.5	.6
.Properties of nucleons	17	.1	.3	.6	.6	.3	.5	.7
.Nuclear reactions - general nature	41	.1	.3	1.1	.7	.3	.5	.7
.Nuclear fission	49	.1	.3	1.2	.6	.3	.5	.6
.Nuclear fusion	46	.1	.3	1.1	.5	.3	.5	.6
.Radiation hazards	46	.2	.4	1.2	.7	.3	.6	.7
TEMPERATURE AND HEAT								
.Temperature								
a) scales	27	.8	.7	1.8	.8	1.1	.5	.8
b) methods of measurement	20	.8	.7	1.7	.8	1.1	.5	.9
.Thermal expansion	22	.7	.6	1.5	.8	.8	.6	.9
.Heat								
a) Kinetic theory	22	.4	.5	1.4	.9	.5	.5	.9
b) Maxwellian velocity distribution	2	.0	.0	.2	.4	.2	.5	.4
c) Conversion of mechanical to thermal energy	32	.1	.3	1.3	.8	.3	.5	.8
d) Specific heat	32	.3	.5	1.8	.9	.5	.7	.8
e) Calorimetry	20	.3	.5	1.5	.9	.4	.5	.9
f) Gas laws	7	.0	.0	.5	.8	.0	.0	.8
g) Change of phase	17	.3	.5	1.3	1.2	.3	.5	1.2
h) Vapour pressure and humidity	12	.1	.3	.7	.8	.4	.5	1.0
.Heat transfer								
a) Convection	27	.5	.5	1.5	.8	.9	.4	.8

TABLE 11.36 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES		INSTRUCTORS TEACHING TOPIC %		ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS			
				ENTRY	MEAN	S.D.	EXIT	MEAN	S.D.	ENTRY	MEAN	S.D.	%
TEMPERATURE AND HEAT													
.Heat transfer (Cont'd)													
b) Conduction	27	.5	.5	.5	1.4	.9	.9	.4	1.7	.8	7		
c) Radiation	29	.3	.5	.5	1.5	.8	.7	.5	1.7	.8	10		
.Thermodynamics													
a) First Law	7	.1	.4	.5	.5	.5	.3	.5	.8	.9	2		
b) Second Law	5	.0	.0	.3	.5	.5	.2	.4	.4	.8	2		
c) The Carnot cycle	0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0		
PROPERTIES OF SOLIDS OTHER THAN THERMAL													
.Crystallographic properties of simple solids	5	.0	.0	.4	.7	.1	.4	.5	.9	2			
.Elastic properties, Hooke's law; moduli and compliances	15	.1	.3	.9	.9	.3	.5	.9	.9	5			
.Electronic properties; band structure; conductors; semi-conductors and insulators	5	.0	.0	.5	.9	.0	.0	.5	.9	0			
.Electronic properties, the diode	15	.0	.0	.8	.9	.0	.0	.9	1.0	0			
.Electronic properties, the transistor	7	.0	.0	.4	.5	.0	.0	.5	.8	0			
FLUIDS AT REST AND IN MOTION													
.Density and specific gravity	44	.7	.6	2.1	.7	1.0	.6	2.2	.8	10			
.Atmospheric pressure - the barometer	34	.6	.7	1.7	1.0	.8	.6	1.8	1.0	7			
.Hydrostatic pressure - Pascal's law	29	.3	.7	1.5	.7	.5	.7	1.7	.8	10			
.Archimedes' principle - buoyancy	41	.5	.6	2.0	.8	.7	.7	2.0	.8	10			
.Surface tension and capillary action	20	.3	.5	.9	.8	.3	.5	.9	.8	2			
.Fluid flow, continuity conditions	20	.2	.4	.8	.6	.3	.5	.9	.7	5			
.Streamline flow	17	.1	.3	.7	.7	.2	.4	.7	.9	2			
.Bernoulli's Principle	41	.1	.2	1.1	.7	.3	.4	1.3	.8	10			
.Turbulent flow	10	.0	.0	.6	.7	.0	.0	.6	1.1	0			
.Viscosity	15	.3	.5	.9	.7	.3	.5	1.0	.8	0			
.Poiseuille's Law	5	.0	.0	.4	.8	.0	.0	.4	.8	0			
SPECIAL THEORY OF RELATIVITY	10	.0	.0	.6	.5	.0	.0	.6	.5	0			
PROPERTIES OF ELEMENTARY PARTICLES (other than proton, neutron or electron)	2	.0	.0	.2	.4	.0	.0	.3	.5	0			

TABLE 11.37
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN ^a	S.D.	ENTRY	EXIT	ENTRY	S.D.	MEAN	S.D.	
MEASUREMENT										
.Mass, length and time (fundamental quantities)	80	1.1	.6	2.2	.7	1.4	.6	2.3	.7	20
.Errors	80	.3	.6	1.6	.8	.9	.7	2.0	1.0	40
.Accuracy and precision (significant figures, "rounding off")	90	.4	.6	1.9	.7	.9	.7	2.2	.7	44
.SI	74	.9	.7	2.1	.7	1.4	.8	2.3	.8	40
.Development of relations relating physical quantities by dimensional analysis	68	.2	.5	1.4	.9	.7	.7	1.8	1.0	36
.Dimensional consistency of equations relating physical quantities	66	.3	.6	1.5	1.0	.8	.8	1.9	1.0	36
FUNCTIONS										
Given a table of experimental data:										
.Plotting and properly labelling a graph of the data	74	1.2	.7	2.3	.5	1.5	.6	2.4	.6	24
.Writing the equation of a linear relation	76	.6	.7	2.0	.7	1.3	.8	2.2	.7	42
.Replotting a non-linear relation to obtain a straight line and writing the relation	38	.2	.5	.9	1.0	.4	.7	1.2	1.2	14
.Plotting a power law relation on log-log paper and writing the relation	4	.0	.0	.1	.3	.1	.3	.3	.8	4
.Plotting an exponential relation on semi-log paper and writing the relation	4	.0	.0	.1	.3	.1	.3	.3	.8	4
MOTION (Kinematics)										
.Motion with constant acceleration in one, two, or three dimensions	98	.4	.5	2.3	.6	.6	.6	2.4	.6	20
.Straight line kinematics with uniform acceleration	100	.3	.5	2.4	.5	.6	.6	2.4	.5	24
.Straight line kinematics with non-uniform acceleration	62	.1	.3	1.3	1.0	.2	.4	1.3	1.0	10
.Two-dimensional kinematics with uniform acceleration (e.g., projectile motion)	52	.0	.2	1.0	.9	.2	.4	1.3	1.0	12
.Two-dimensional kinematics with non-uniform acceleration (e.g., circular motion)	22	.0	.0	.4	.7	.1	.3	.6	.9	4
.Three-dimensional kinematics with uniform acceleration	6	.0	.0	.1	.3	.1	.3	.4	.8	2
.Three-dimensional kinematics with non-uniform acceleration	0	.0	.0	.0	.0	.0	.2	.2	.7	0

^aThe means in this table are based on a response key which ranges from 0-indicating No Knowledge to 4-Advanced. See physics questionnaire for details.

The figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 11.37 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

INSTRUCTORS TEACHING TOPIC %	SPECIFIC OBJECTIVES	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	EXIT	
NEWTON'S LAWS OF MOTION - DYNAMICS OF A PARTICLE										
100	.Newton's first law, mass and inertia	.5	.5	2.3	.6	.6	2.3	.6	18	
100	.Newton's second law	.2	.4	2.3	.5	.5	2.4	.6	26	
96	.Newton's third law	.2	.4	2.2	.6	.4	2.3	.6	16	
90	.Resolution and summation of forces by scale drawing	.1	.2	2.1	.8	.4	2.3	.8	24	
50	.Resolution and summation of forces by analytical methods	.0	.2	1.2	1.0	.4	1.4	1.2	20	
52	.Frames of reference	.0	.2	.8	.7	.1	.9	.9	6	
12	.Pseudo forces	.0	.0	.2	.4	.0	.3	.7	2	
18	.Dynamics of circular motion	.0	.2	.4	.7	.1	.6	.9	4	
STATICS										
14	.Moments	.1	.3	.7	1.0	.4	1.0	1.1	10	
18	.Laws of equilibrium	.1	.3	.7	1.0	.2	1.0	1.2	6	
20	.Simple machines, the lever, the incline plane, pulleys	.3	.6	1.0	1.2	.4	1.2	1.3	0	
NEWTON'S LAWS OF MOTION - DYNAMICS OF A RIGID BODY										
18	.Translational motion	.1	.3	.8	1.0	.3	1.0	1.3	8	
8	.Rotational motion, torque, moment of inertia, angular acceleration	.1	.4	.3	.7	.2	.7	1.0	4	
4	.Combined translational and rotational motion	.0	.0	.1	.3	.1	.5	.9	2	
36	.Friction	.3	.5	1.2	.9	.5	1.5	1.2	8	
GRAVITY -NEAR THE EARTH'S SURFACE										
66	.Distinction between gravitational and inertial mass; principle of equivalence	.2	.4	1.3	1.0	.3	1.4	1.1	10	
96	.Weight and acceleration due to gravity	.4	.5	2.2	.6	.7	2.3	.7	24	
54	.The dynamics of projectile motion (no air resistance)	.1	.3	1.2	1.0	.3	1.5	1.1	10	
18	.The dynamics of projectile motion (air resistance)	.0	.2	.4	.7	.1	.6	.9	6	
92	.Dependence of g on distance from centre of earth or on latitude	.1	.3	1.7	.6	.3	1.9	.7	12	

TABLE 11.37 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
UNIVERSAL GRAVITATION										
.Ptolemy, Copernicus, Kepler	18	.0	.2	.4	.6	.1	.3	.6	.9	2
.Kepler's Laws	14	.0	.0	.3	.6	.1	.2	.6	.9	2
.Universal law of gravitation	78	.1	.3	1.7	.8	.2	.4	1.9	.8	6
.Circular orbits	22	.0	.2	.6	.9	.1	.3	.6	1.0	2
.General motion under a central force	14	.0	.0	.3	.5	.1	.2	.6	.9	2
MOMENTUM										
.Impulse and momentum	24	.1	.3	1.0	1.0	.2	.4	1.4	1.3	4
.Conservation of linear momentum	22	.1	.2	1.0	1.1	.2	.4	1.4	1.3	4
.Elastic collisions (in one dimension)	14	.0	.0	.5	.8	.1	.2	1.0	1.3	2
.Inelastic collisions (in one dimension)	10	.0	.0	.3	.6	.1	.2	.8	1.2	2
.Collisions of bodies in two dimensions	6	.0	.0	.2	.4	.1	.3	.5	.9	2
.Angular momentum	0	.0	.0	.0	.0	.1	.3	.5	.9	2
.Conservation of angular momentum	0	.0	.0	.0	.0	.1	.3	.3	.7	2
.Precession	0	.0	.0	.0	.0	.0	.0	.2	.4	0
WORK, ENERGY AND POWER										
.Work done by a constant force	100	.4	.6	2.3	.5	.6	.7	2.4	.6	14
.Work done by a non-constant force (e.g., $F=kx$)	28	.1	.2	.6	.9	.1	.3	.8	1.0	4
.Work done by a non-constant force (e.g., Fv/r^2)	16	.1	.2	.3	.6	.1	.4	.5	.8	4
.Work performed by compressing a gas	4	.0	.0	.1	.2	.1	.3	.3	.7	4
.Kinetic energy and its relation to the work	100	.3	.5	2.2	.5	.5	.6	2.4	.5	12
.Potential energy (constant force e.g., mgh)	100	.3	.5	2.3	.5	.5	.6	2.4	.6	14
.Potential energy (non-constant force e.g., $\frac{1}{2}kx^2$ or $\frac{Gm_1m_2}{r}$)	28	.0	.2	.5	.8	.1	.3	.7	.9	6
.Conservation of mechanical energy (transformations between kinetic and potential energy)	94	.3	.5	2.2	.6	.5	.6	2.3	.7	18
.Power	98	.3	.5	2.2	.6	.5	.6	2.3	.6	16
.Efficiency of work	46	.2	.4	1.1	1.0	.3	.6	1.5	1.1	8

TABLE 11.37 (Cont'd)

SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
VIBRATIONS AND WAVES										
.Vibrations	82	.5	.5	2.1	.6	.7	.6	2.2	.6	10
.Kinematic description of SHM, ($y = A \sin \omega t$ or reference circle)	4	.0	.0	.1	.3	.1	.3	.5	.8	4
.Motion under a harmonic force ($F = -kx$)	2	.0	.2	.1	.3	.1	.3	.4	.7	2
.Solutions of the equation of motion for an oscillating system (Newton's second law)	8	.0	.0	.2	.6	.1	.3	.5	.8	4
.Mass on a spring	40	.2	.4	.8	.8	.3	.5	1.1	.9	8
.Simple pendulum (in small angle approximation)	56	.3	.5	1.4	1.0	.4	.5	1.6	1.0	2
.Rigid pendulum (in small angle approximation)	10	.0	.2	.3	.7	.1	.3	.4	.8	4
.Torsional oscillations	18	.0	.0	.3	.6	.0	.2	.4	.6	2
.Conservation of energy in undamped oscillations	30	.0	.0	.7	.9	.0	.0	.8	.8	0
.Exponential decay of oscillations	2	.0	.0	.0	.2	.0	.0	.3	.6	0
.Derivation of the differential wave equation for compressional waves in a gas or transverse waves on a string	12	.0	.2	.4	.9	.1	.3	.6	1.0	2
.Relation between frequency, wavelength and velocity ($v = f\lambda$)	88	.2	.4	2.2	.7	.4	.6	2.3	.5	14
.Waves propagated in one dimension	86	.2	.4	1.9	.7	.3	.4	1.9	.6	10
.Waves propagated in two dimensions	60	.1	.3	1.5	1.0	.2	.4	1.6	.9	8
.Polarization	36	.0	.0	.7	.7	.1	.3	1.0	.9	4
.Doppler effect	44	.1	.2	.8	.8	.2	.5	1.2	.9	6
.Shock waves	22	.0	.0	.3	.5	.1	.3	.4	.6	4
.Energy carried by a wave in one dimension	48	.0	.2	.9	.8	.1	.3	1.1	.9	8
.Relative and absolute intensity of sound waves (decibels)	52	.1	.3	.9	.7	.2	.4	1.2	.8	4
.Energy radiated by a point source (inverse square law)	46	.0	.2	.9	.9	.2	.4	1.2	1.0	8
HOW LIGHT BEHAVES										
.Qualitative discussion of light sources	68	.5	.5	1.5	.8	.6	.6	1.6	.8	6
.Rectilinear propagation of light waves	76	.5	.6	1.7	.8	.6	.6	1.8	.7	6
.Concept of a wave front	78	.1	.3	1.3	.8	.2	.4	1.5	.8	10
.Huygens' principle	42	.1	.2	.8	.9	.1	.3	.9	1.0	4
.Reflection of waves at a plane boundary	84	.4	.6	1.8	.8	.5	.6	1.9	.8	8
.Reflection of waves at a spherical boundary	60	.2	.4	1.3	1.0	.3	.6	1.3	1.1	10

TABLE 11.37 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
HOW LIGHT BEHAVES (Cont'd)										
.Convex and concave mirrors										
a) scale drawings	86	.3	.5	2.1	.8	.4	.6	2.1	.8	10
b) analytical treatment	64	.2	.5	1.3	1.1	.4	.7	1.7	1.1	10
.Refraction of waves at a plane interface between two media	84	.4	.6	1.9	.8	.5	.7	2.0	.9	8
.Concept of refractive index (Snell's law)	86	.2	.5	2.1	.8	.3	.6	2.2	.9	8
.Total internal reflection	82	.2	.5	1.9	.9	.2	.5	2.0	.8	6
.Refraction by a prism	84	.4	.5	1.7	.9	.4	.6	1.7	.8	6
.Prism spectrometer - minimum deviation	22	.1	.4	.5	.7	.1	.4	.8	1.0	4
.Dispersive power of a medium	28	.1	.3	.5	.8	.1	.3	.8	1.0	2
.Refraction at a spherical interface	36	.1	.3	.8	.9	.1	.3	1.1	1.0	0
.The lensmaker's equation	18	.1	.3	.5	.9	.1	.4	.9	1.1	4
.The thin lens equation	24	.1	.4	.7	1.1	.2	.5	1.2	1.2	2
.Formation of images by lenses										
a) scale drawings	84	.2	.4	2.1	.7	.3	.6	2.2	.7	8
b) analytical treatment	56	.1	.4	1.4	1.1	.3	.6	1.7	1.1	6
.Power of a lens	32	.1	.4	.7	.9	.2	.5	1.2	1.1	4
.Chromatic aberration	54	.1	.2	.8	.5	.1	.3	1.0	.7	4
.Monochromatic aberrations	42	.0	.0	.6	.6	.0	.2	.8	.7	2
.The eye and the camera	76	.2	.4	1.4	.8	.4	.5	1.6	.8	6
.Eye defects and corrective lenses	72	.1	.3	1.3	.8	.2	.5	1.4	.8	4
.Simple and compound microscopes	66	.1	.3	1.2	.8	.2	.4	1.4	.7	6
.The telescope	76	.1	.3	1.4	.7	.2	.4	1.5	.6	6
INTERFERENCE AND DIFFRACTION										
.Superposition of pulses and/or waves	84	.1	.2	1.6	.7	.2	.4	1.9	.7	6
.Reflection and transmission of pulses and waves at a boundary	74	.1	.3	1.3	.8	.2	.4	1.6	.9	4
.Standing waves on a string, ends fixed	82	.0	.2	1.7	.8	.1	.3	1.9	.7	6
.Standing waves in a pipe, both ends open	72	.0	.2	1.9	.8	.2	.4	2.0	.6	10
.Standing waves in a pipe, one end open, one end closed	74	.0	.2	2.0	.8	.2	.4	2.1	.5	8

TABLE 11.37 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT	ENTRY		EXIT			
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.			
INTERFERENCE AND DIFFRACTION (Cont'd)										
.Interference of periodic waves, two point sources in a two-dimensional medium	70	.1	.2	1.4	.9	.2	.5	1.4	1.0	8
.Interference effects produced by a double slit (Young's double slit)	56	.1	.4	.9	.8	.2	.5	1.2	1.0	4
.Interference effects produced by a multiple slit	16	.1	.4	.3	.7	.1	.2	.5	.8	0
.Fraunhofer diffraction by a straight edge	10	.0	.0	.2	.4	.0	.0	.4	.6	0
.Fraunhofer diffraction by a single slit (single slit interference)	12	.0	.0	.2	.5	.0	.0	.5	.8	0
.Fraunhofer diffraction by a circular aperture	4	.0	.0	.1	.3	.0	.0	.2	.5	0
.Fraunhofer diffraction by a grating	8	.0	.2	.2	.6	.1	.2	.4	.7	0
.Rayleigh resolution criterion	0	.0	.0	.0	.0	.0	.0	.1	.3	0
.Resolving power of a grating	0	.0	.0	.0	.0	.0	.0	.1	.3	0
.Grating spectrometer	6	.0	.0	.1	.3	.0	.0	.3	.5	0
.Fresnel diffraction	6	.0	.0	.1	.3	.0	.0	.2	.4	0
.Interference effects in parallel thin films	8	.0	.0	.2	.6	.0	.0	.4	.8	0
.Michelson interferometer	6	.0	.0	.2	.6	.0	.0	.4	.8	0
.Interference effects in wedge-shaped thin films	4	.0	.0	.1	.4	.0	.0	.4	.8	0
ELECTRICITY AND MAGNETISM										
.Electrostatics	82	.7	.6	1.9	.8	.8	.5	2.0	.7	12
.Electric force (Coulomb's law)	68	.3	.4	1.5	.9	.3	.5	1.7	.9	4
.Electric field	76	.2	.4	1.3	.8	.3	.4	1.3	.8	8
.Electric potential energy	80	.1	.3	1.5	.8	.2	.4	1.6	.9	8
.Electric potential difference - volt	90	.2	.4	2.1	.6	.2	.4	2.2	.5	8
.Sources of emf	70	.2	.4	1.4	.9	.3	.5	1.6	.9	4
.Millikan experiment	46	.0	.2	.8	.7	.1	.3	1.1	.9	2
.Motion of a charge - ampere	90	.1	.3	1.9	.7	.2	.4	2.1	.7	6
.Ohm's Law - constant resistance	92	.1	.3	2.2	.6	.2	.4	2.2	.6	8
.Resistance of a conductor	88	.1	.3	2.0	.8	.2	.4	2.1	.7	6
.D.C. electric circuits	88	.2	.5	2.1	.7	.4	.5	2.1	.7	12
.Kirchhoff's Laws	28	.0	.0	.6	.8	.1	.3	.9	1.1	6
.Capacitance	24	.1	.2	.4	.7	.1	.3	.8	.9	2

TABLE 11.37 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

INSTRUCTORS		SPECIFIC OBJECTIVES		ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
TEACHING TOPIC	%			ENTRY	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	EXIT	
ELECTRICITY AND MAGNETISM (Cont'd)												
.Properties of dielectrics	8			.0	.0	.1	.3	.0	.0	.3	.5	0
.Transients (RC circuits)	4			.0	.0	.1	.3	.0	.2	.3	.6	2
.Electric power in DC circuits	78			.1	.4	1.9	.8	.1	.3	2.0	.8	2
.Magnetism	78			.5	.5	1.7	.7	.5	.6	1.7	.8	2
.Magnetic field	84			.4	.5	1.6	.7	.4	.5	1.7	.7	6
.Force on moving charge in a magnetic field	78			.1	.4	1.4	.8	.3	.5	1.6	.8	12
.Ratio of charge to mass of the electron	38			.1	.2	.8	.9	.1	.3	1.0	.9	2
.Magnetic field produced by a moving charge	84			.1	.3	1.4	.7	.2	.4	1.7	.8	10
.Force on a current carrying conductor in a uniform magnetic field	80			.1	.3	1.4	.8	.1	.4	1.6	.9	6
.Electric meters - galvanometers	86			.1	.4	1.6	.8	.2	.5	1.7	.8	8
.Electric motors	86			.2	.4	1.4	.8	.3	.5	1.6	.8	8
.Emf in a conductor moving in a uniform magnetic field	82			.1	.3	1.5	.8	.2	.4	1.7	.8	8
Lenz' law	48			.1	.2	.9	.8	.1	.3	1.1	.9	4
.Inductance	82			.1	.3	1.3	.7	.2	.4	1.5	.7	8
.AC generator	80			.1	.3	1.3	.7	.2	.4	1.5	.7	8
.DC generator	40			.1	.2	.8	.9	.1	.3	1.0	.9	4
.AC circuits	78			.1	.3	1.7	.8	.2	.4	2.1	.6	6
.Transformers	18			.0	.0	.3	.5	.0	.2	.5	.6	2
.Hysteresis	70			.0	.2	1.1	.7	.1	.3	1.2	.8	6
.Electromagnetic spectrum												
ATOMIC STRUCTURE												
.Thomson model of atom	48			.0	.2	.8	.6	.1	.3	1.0	.6	2
.Rutherford scattering experiment	52			.1	.3	1.0	.5	.1	.3	1.2	.5	2
."Solar system" model of atom (Rutherford model)	52			.2	.4	1.1	.6	.3	.5	1.1	.7	2
.Properties of electron	54			.2	.4	1.3	.8	.2	.4	1.3	.7	2
.Photoelectric effect (Photons)	50			.0	.2	1.1	.8	.1	.3	1.3	.9	2
.Compton effect	6			.0	.0	.1	.3	.1	.2	.4	.8	2
.Particle - wave duality of radiation	30			.0	.0	.6	.7	.0	.2	.7	.7	2
.Particle - wave duality of matter (de Broglie)	16			.0	.0	.3	.6	.1	.2	.6	.7	2

TABLE 11.37 (Cont'd)

SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	S.D.	
ATOMIC STRUCTURE (Cont'd)										
.Line spectra (historical evidence, Balmer series, etc.)	22	.0	.0	.5	.7	.1	.2	.8	.9	2
.Discrete energy levels (Franck - Hertz experiment)	18	.0	.0	.4	.7	.1	.2	.8	.8	2
.Energy levels of hydrogen (Bohr model)	24	.0	.0	.6	.8	.1	.2	.8	.8	2
NUCLEAR PHYSICS										
.Radioactive decay	50	.1	.3	1.3	.8	.1	.3	1.5	.7	2
.Alpha, beta and gamma radiation; properties and spectra	50	.0	.2	1.1	.6	.1	.3	1.4	.7	2
.Detection of radiation	44	.1	.3	.9	.7	.1	.3	1.1	.7	0
.Structure of the nucleus	46	.1	.4	1.1	.7	.2	.4	1.3	.8	4
.Properties of nucleons	22	.1	.3	.6	.7	.1	.3	1.0	.8	2
.Nuclear reactions - general nature	48	.0	.0	1.2	.7	.1	.3	1.4	.7	4
.Nuclear fission	48	.0	.2	1.1	.7	.0	.2	1.4	.8	0
.Nuclear fusion	48	.0	.2	1.1	.7	.0	.2	1.4	.8	0
.Radiation hazards	40	.1	.3	1.0	.7	.2	.4	1.3	.7	0
TEMPERATURE AND HEAT										
.Temperature										
a) scales	8	.8	.8	1.1	.9	.9	.8	1.4	1.2	2
b) methods of measurement	6	.6	.5	.8	.6	.5	.5	1.0	.9	2
.Thermal expansion	8	.4	.5	.8	.6	.7	.5	1.2	1.0	2
.Heat										
a) Kinetic theory	6	.4	.5	.7	.5	.5	.6	.8	.8	2
b) Maxwellian velocity distribution	0	.0	.0	.0	.0	.0	.0	.4	.6	0
c) Conversion of mechanical to thermal energy	4	.1	.3	.3	.5	.2	.5	.8	.8	0
d) Specific heat	2	.7	.7	.7	.7	.8	.8	1.2	1.1	0
e) Calorimetry	4	.3	.5	.5	.7	.5	.6	1.2	1.0	2
f) Gas laws	0	.0	.0	.0	.0	.0	.0	.6	.9	0
g) Change of phase	4	.4	.5	.7	.5	.4	.6	.8	.8	0
h) Vapour pressure and humidity	4	.0	.0	.2	.4	.3	.5	.8	1.0	4
.Heat transfer										
a) Convection	6	.5	.5	.9	.7	.6	.5	1.1	1.1	2

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SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE.

SPECIFIC OBJECTIVES			INSTRUCTORS TEACHING TOPIC %		ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
			ENTRY	MEAN	S.D.	EXIT	MEAN	S.D.	ENTRY	MEAN	S.D.	%
TEMPERATURE AND HEAT												
Heat transfer (Cont'd)												
b) Conduction	6		.5	.5	.9	.7	.6	.5	1.1	1.1		2
c) Radiation	6		.5	.5	.9	.7	.6	.5	1.1	1.1		2
Thermodynamics												
a) First Law	0		.1	.3	.1	.4	.0	.0	.3	.5		0
b) Second Law	0		.0	.0	.0	.0	.0	.0	.3	.5		0
c) The Carnot cycle	0		.0	.0	.0	.0	.0	.0	.3	.5		0
PROPERTIES OF SOLIDS OTHER THAN THERMAL												
.Crystallographic properties of simple solids	4		.0	.0	.1	.4	.0	.0	.4	.5		0
.Elastic properties, Hooke's law; moduli and compliances	4		.1	.3	.2	.6	.1	.3	.3	.7		0
.Electronic properties; band structure; conductors; semi-conductors and insulators	16		.0	.0	.5	.5	.0	.0	.8	.4		0
.Electronic properties, the diode	22		.0	.0	.9	.7	.0	.0	1.3	.6		0
.Electronic properties, the transistor	18		.0	.0	.7	.7	.0	.0	1.2	.6		0
FLUIDS AT REST AND IN MOTION												
.Density and specific gravity	20		.7	.7	1.7	1.0	1.0	.7	1.8	.9		6
.Atmospheric pressure - the barometer	10		.7	.7	1.1	1.0	.6	.7	1.1	1.0		0
.Hydrostatic pressure - Pascal's law	4		.3	.6	.6	1.1	.4	.7	.9	1.3		0
.Archimedes' principle - buoyancy	16		.8	.8	1.5	1.0	.7	.8	1.6	.9		0
.Surface tension and capillary action	6		.2	.4	.4	.6	.3	.5	.7	.8		0
.Fluid flow, continuity conditions	2		.0	.0	.1	.3	.0	.0	.3	.7		0
.Streamline flow	4		.0	.0	.3	.6	.0	.0	.3	.7		0
.Bernoulli's Principle	26		.0	.0	1.0	.7	.1	.3	1.0	.7		2
.Turbulent flow	0		.0	.0	.0	.0	.0	.0	.2	.4		0
.Viscosity	4		.0	.0	.1	.4	.0	.0	.3	.5		0
.Poiseuille's Law	0		.0	.0	.0	.0	.0	.0	.1	.3		0
SPECIAL THEORY OF RELATIVITY												
PROPERTIES OF ELEMENTARY PARTICLES (other than proton, neutron or electron)	20		.0	.0	.7	.6	.0	.0	.7	.6		0
OTHER TOPICS (please list and respond appropriately)	6		.0	.0	.2	.4	.0	.0	.5	.5		0

TABLE 11.38
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

MEASUREMENT	SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
			ENTRY	S.D.	EXIT	ENTRY	S.D.	EXIT			
MEASUREMENT	.Mass, length and time (fundamental quantities)	66	1.6	.6	2.5	.9	1.9	.6	2.6	.9	16
	.Errors	72	1.0	.8	2.1	.8	1.6	.8	2.3	.8	34
	.Accuracy and precision (significant figures, "rounding off")	70	1.4	.8	2.4	.8	1.8	.8	2.6	.8	28
	.SI	56	1.6	.7	2.5	.7	1.9	.7	2.6	.8	22
	.Development of relations relating physical quantities by dimensional analysis	74	.9	.8	2.2	.9	1.5	.9	2.6	.9	30
	.Dimensional consistency of equations relating physical quantities	68	1.1	.8	2.3	.9	1.6	.9	2.7	.9	32
FUNCTIONS	Given a table of experimental data:										
	.Plotting and properly labelling a graph of the data	64	2.0	.8	2.9	.8	2.2	.8	2.9	.8	12
	.Writing the equation of a linear relation	74	1.8	.7	2.8	.8	2.0	.6	2.9	.8	22
	.Replotting a non-linear relation to obtain a straight line and writing the relation	86	.7	.9	2.5	.8	1.3	1.0	2.8	.7	36
	.Plotting a power law relation on log-log paper and writing the relation	54	.1	.4	1.4	1.2	.5	.8	2.0	1.2	18
	.Plotting an exponential relation on semi-log paper and writing the relation	32	.2	.5	.9	1.2	.4	.7	1.3	1.4	14
MOTION (Kinematics)											
	.Motion with constant acceleration in one, two, or three dimensions	90	1.6	.8	3.1	.6	2.0	.6	3.2	.6	18
	.Straight line kinematics with uniform acceleration	90	1.8	.7	3.2	.5	2.0	.6	3.3	.6	16
	.Straight line kinematics with non-uniform acceleration	88	.7	.9	2.4	1.1	1.0	.9	2.7	1.0	16
	.Two-dimensional kinematics with uniform acceleration (e.g., projectile motion)	96	.5	.8	3.0	.6	.9	1.0	3.3	.5	16
	.Two-dimensional kinematics with non-uniform acceleration (e.g., circular motion)	92	.3	.8	2.9	.8	.7	1.0	3.1	.8	16
	.Three-dimensional kinematics with uniform acceleration	32	.1	.2	.8	1.1	.1	.4	1.1	1.2	4
	.Three-dimensional kinematics with non-uniform acceleration	18	.1	.2	.5	.8	.1	.3	.8	1.2	2
	The means in this table are based on a response key which ranges from 0-indicating No Knowledge to 4-indicating Advanced.										
	The figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.										

TABLE 11.38 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
NEWTON'S LAWS OF MOTION - DYNAMICS OF A PARTICLE										
.Newton's first law, mass and inertia	88	1.8	.6	3.1	.6	2.0	.6	3.2	.7	6
.Newton's second law	88	1.8	.6	3.1	.6	1.9	.6	3.2	.6	10
.Newton's third law	84	1.5	.7	2.9	.6	1.7	.7	3.0	.7	14
.Resolution and summation of forces by scale drawing	90	1.1	1.0	2.9	.7	1.5	1.0	3.0	.7	16
.Resolution and summation of forces by analytical methods	90	.8	.8	2.8	1.0	1.2	1.0	3.0	1.1	20
.Frames of reference	92	.4	.7	2.1	.9	.7	.9	2.5	.8	12
.Pseudo forces	80	.1	.4	1.7	1.0	.6	.9	2.2	1.0	22
.Dynamics of circular motion	96	.4	.6	2.8	.8	.7	.9	3.1	.6	18
STATICS										
.Moments	14	.4	.8	.9	1.3	.7	1.1	1.4	1.5	4
.Laws of equilibrium	20	.5	1.0	1.2	1.4	.8	1.1	1.8	1.7	8
.Simple machines, the lever, the incline plane, pulleys	12	.6	1.1	1.2	1.4	.7	1.2	1.4	1.6	2
NEWTON'S LAWS OF MOTION - DYNAMICS OF A RIGID BODY										
.Translational motion	30	1.0	1.2	2.0	1.3	1.3	1.3	2.2	1.3	4
.Rotational motion, torque, moment of inertia, angular acceleration.	14	.3	.6	.8	1.2	.5	.9	.9	1.1	6
.Combined translational and rotational motion	12	.3	.5	.6	.8	.5	.9	.9	1.0	4
.Friction	40	.9	.7	2.2	1.0	1.1	1.0	2.2	1.1	8
GRAVITY -NEAR THE EARTH'S SURFACE										
.Distinction between gravitational and inertial mass; Principle of equivalence	90	.3	.7	1.9	.9	.6	.8	2.3	.9	16
.Weight and acceleration due to gravity	88	1.5	.7	3.0	.6	1.7	.7	3.0	.6	12
.The dynamics of projectile motion (no air resistance)	94	.6	.8	3.1	.5	.8	.9	3.2	.6	16
.The dynamics of projectile motion (air resistance)	68	.3	.6	1.9	1.2	.5	.8	2.2	1.2	10
.Dependence of g on distance from centre of earth or on latitude	92	1.0	.8	2.7	.8	1.3	.8	2.9	.6	10

TABLE 11.39 (Cont'd)
 SECONDARY SCHOOL PHYSICS YEAR 5
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
UNIVERSAL GRAVITATION										
.Ptolemy, Copernicus, Kepler	88	.1	.3	1.4	.7	.3	.5	1.5	.7	14
.Kepler's Laws	90	.2	.6	2.3	.8	.3	.7	2.4	.9	12
.Universal law of gravitation	92	1.2	.8	2.8	.7	1.3	.9	2.9	.7	10
.Circular orbits	96	.4	.7	2.7	.7	.5	.8	2.8	.7	12
.General motion under a central force	86	.4	.7	2.5	1.0	.5	.8	2.7	.9	10
MOMENTUM										
.Impulse and momentum	98	.3	.7	3.0	.6	.6	.9	3.2	.6	14
.Conservation of linear momentum	96	.3	.7	3.1	.6	.5	.9	3.3	.6	12
.Elastic collisions (in one dimension)	96	.2	.7	3.0	.6	.4	.9	3.2	.6	12
.Inelastic collisions (in one dimension)	98	.2	.6	2.8	.7	.4	.9	3.0	.7	12
.Collisions of bodies in two dimensions	90	.1	.4	2.8	.9	.4	.8	3.0	.9	12
.Angular momentum	20	.1	.3	.6	1.2	.2	.7	1.0	1.2	4
.Conservation of angular momentum	18	.1	.2	.5	1.0	.1	.6	.9	1.1	2
.Precession	12	.1	.2	.3	.8	.2	.6	.4	.7	2
WORK, ENERGY AND POWER										
.Work done by a constant force	88	1.7	.7	3.0	.6	1.8	.7	3.2	.7	8
.Work done by a non-constant force (e.g., $F=kx$)	92	.3	.7	2.8	.7	.5	.8	3.0	.6	10
.Work done by a non-constant force (e.g., $F=k/r^2$)	88	.4	.7	2.6	.8	.5	.7	2.8	.8	6
.Work performed by compressing a gas	12	.0	.2	.3	.8	.0	.0	.6	1.0	0
.Kinetic energy and its relation to the work	90	1.4	.8	2.9	.6	1.6	.8	3.1	.7	8
.Potential energy (constant force e.g., mgh)	88	1.6	.8	3.0	.6	1.8	.8	3.2	.7	6
.Potential energy (non-constant force e.g., $\frac{1}{2}kx^2$ or $\frac{Gm_1m_2}{r}$)	96	.5	.8	2.9	.6	.6	.9	3.0	.8	10
.Conservation of mechanical energy (transformations between kinetic and potential energy)	88	1.4	.9	2.9	.8	1.6	.9	3.2	.7	10
.Power	46	1.5	.9	2.2	1.1	1.5	.9	2.4	1.1	2
.Efficiency of work	24	.7	1.0	1.2	1.3	1.0	1.1	1.7	1.3	10

TABLE 11.38 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		ENTRY	EXIT	MEAN	ENTRY	EXIT	MEAN			
VIBRATIONS AND WAVES										
.Vibrations	62	1.5	.8	2.4	.9	1.7	.8	2.5	1.0	8
.Kinematic description of SHM, ($y = A \sin \omega t$ or reference circle)	32	.2	.6	.9	1.2	.2	.6	1.3	1.3	2
.Motion under a harmonic force ($F = -kx$)	46	.1	.4	1.3	1.3	.2	.6	1.6	1.3	4
.Solutions of the equation of motion for an oscillating system (Newton's second law)	30	.2	.5	.9	1.2	.3	.7	1.4	1.4	6
.Mass on a spring	72	.5	.9	2.2	1.0	.6	.9	2.4	1.0	4
.Simple pendulum (in small angle approximation)	44	.7	.9	1.5	1.1	.8	.9	2.0	1.1	2
.Rigid pendulum (in small angle approximation)	16	.3	.8	.6	1.1	.3	.9	.8	1.2	0
.Torsional oscillations	8	.2	.7	.4	1.0	.2	.8	.6	1.1	2
.Conservation of energy in undamped oscillations	24	.4	.7	1.0	1.3	.5	.8	1.2	1.5	2
.Exponential decay of oscillations	10	.0	.2	.2	.5	.1	.2	.3	.6	0
.Derivation of the differential wave equation for compressional waves in a gas or transverse waves on a string	10	.0	.2	.3	.7	.0	.2	.4	.8	0
.Relation between frequency, wavelength and velocity ($v = f\lambda$)	68	1.8	.8	2.9	.7	1.8	.8	2.9	.7	2
.Waves propagated in one dimension	74	1.5	.8	2.7	.7	1.6	.9	2.9	.7	6
.Waves propagated in two dimensions	80	1.1	.9	2.8	.8	1.3	1.0	2.9	.8	12
.Polarization	44	.4	.6	1.1	.8	.4	.6	1.4	.9	4
.Doppler effect	32	.5	.8	1.1	.9	.6	.7	1.5	1.0	6
.Shock waves	16	.2	.5	.5	.7	.3	.4	.7	.9	2
.Energy carried by a wave in one dimension	44	.6	.9	1.4	1.0	.7	.9	1.4	1.0	4
.Relative and absolute intensity of sound waves (decibels)	12	.3	.5	.5	.8	.4	.5	.8	.9	4
.Energy radiated by a point source (inverse square law)	92	.5	.7	2.4	.9	.7	.8	2.6	.9	4
HOW LIGHT BEHAVES										
.Qualitative discussion of light sources	40	1.2	.6	1.8	1.0	1.3	.6	1.9	1.1	2
.Rectilinear propagation of light waves	58	1.3	.7	2.1	.9	1.5	.7	2.1	.9	2
.Concept of a wave front	70	.9	.7	1.9	.9	1.0	.8	1.9	.9	8
.Huygens' principle	76	.3	.7	1.8	.9	.6	.8	2.0	.9	14
.Reflection of waves at a plane boundary	70	1.3	.8	2.4	.8	1.5	.8	2.5	.7	4
.Reflection of waves at a spherical boundary	70	.9	.9	2.2	.8	1.1	.9	2.3	.8	10

TABLE 11.38 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	EXIT	ENTRY	S.D.	EXIT	
HOW LIGHT BEHAVES (Cont'd)								
.Convex and concave mirrors								
a) scale drawings	18	1.5	1.1	1.7	1.8	1.2	1.8	1.3
b) analytical treatment	16	1.2	1.0	1.4	1.3	1.1	1.7	1.3
.Refraction of waves at a plane interface between two media	76	1.4	.8	2.7	1.6	.8	2.8	.8
.Concept of refractive index (Snell's law)	80	1.5	.7	2.8	1.6	.6	2.9	.8
.Total internal reflection	60	1.4	.8	2.4	1.7	.7	2.5	.9
.Refraction by a prism	46	1.5	.8	2.3	1.7	.7	2.3	1.0
.Prism spectrometer - minimum deviation	26	.3	.7	.9	1.1	.4	1.1	1.2
.Dispersive power of a medium	34	.5	.7	1.2	1.1	.7	1.3	1.1
.Refraction at a spherical interface	26	.5	.8	1.0	1.1	.6	1.1	1.2
.The lensmaker's equation	20	.3	.7	.8	1.1	.4	1.0	1.3
.The thin lens equation	26	.5	.9	1.2	1.1	.8	1.5	1.3
.Formation of images by lenses								
a) scale drawings	20	1.4	1.0	1.6	1.5	1.1	1.9	1.2
b) analytical treatment	22	1.1	1.0	1.5	1.2	1.1	1.6	1.5
.Power of a lens	16	.4	.7	.7	1.1	.4	.8	1.3
.Chromatic aberration	26	.6	.6	.9	.8	.7	1.1	.9
.Monochromatic aberrations	14	.3	.6	.6	.8	.5	.9	1.1
.The eye and the camera	8	.9	.9	1.0	1.0	.9	1.2	1.1
.Eye defects and corrective lenses	4	.9	.9	1.0	1.1	1.0	1.2	1.1
.Simple and compound microscopes	6	.9	.9	1.0	1.1	1.0	1.2	1.1
.The telescope	8	.9	.8	1.0	1.1	1.0	1.3	1.2
INTERFERENCE AND DIFFRACTION								
.Superposition of pulses and/or waves	86	1.1	.7	2.6	1.3	.8	2.7	.9
.Reflection and transmission of pulses and waves at a boundary	92	.9	.7	2.6	1.1	.8	2.7	.8
.Standing waves on a string, ends fixed	68	1.1	.8	2.3	1.2	.9	2.5	1.0
.Standing waves in a pipe, both ends open	12	.8	.9	1.1	1.1	1.1	1.4	1.1
.Standing waves in a pipe, one end open, one end closed	12	.9	.9	1.2	1.0	1.1	1.4	1.1

TABLE 11.38 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	EXIT	ENTRY	S.D.	MEAN	
INTERFERENCE AND DIFFRACTION (Cont'd)								
.Interference of periodic waves, two point sources in a two-dimensional medium	94	.8	.7	2.8	.8	1.0	2.8	14
.Interference effects produced by a double slit (Young's double slit)	98	.6	.7	2.9	.7	.8	2.9	14
.Interference effects produced by a multiple slit	58	.2	.4	1.6	1.3	.4	1.5	8
.Fraunhofer diffraction by a straight edge	48	.2	.4	1.2	1.1	.2	1.4	4
.Fraunhofer diffraction by a single slit (single slit interference)	80	.2	.4	2.3	.9	.3	2.3	6
.Fraunhofer diffraction by a circular aperture	34	.1	.4	.8	.9	.3	1.0	4
.Fraunhofer diffraction by a grating	38	.1	.2	.8	1.0	.2	1.0	6
.Rayleigh resolution criterion	8	.0	.0	.3	.7	.0	.3	0
.Resolving power of a grating	6	.0	.2	.1	.4	.1	.2	0
.Grating spectrometer	30	.1	.2	.6	.7	.2	.5	4
.Fresnel diffraction	16	.0	.0	.4	.8	.1	.3	4
.Interference effects in parallel thin films	84	.1	.5	2.3	1.0	.3	2.5	10
.Michelson interferometer	22	.1	.2	.5	.8	.2	.4	4
.Interference effects in wedge-shaped thin films	90	.1	.5	2.4	.6	.3	2.5	8
ELECTRICITY AND MAGNETISM								
.Electrostatics	50	1.5	.8	2.2	.9	1.7	2.4	10
.Electric force (Coulomb's law)	82	.7	.8	2.8	.6	.9	2.9	10
.Electric field	84	.5	.7	2.6	.7	.7	2.8	12
.Electric potential energy	86	.6	.8	2.7	.7	.9	2.8	10
.Electric potential difference - volt	70	1.2	.8	2.6	.7	1.4	2.7	10
.Sources of emf	26	1.0	.7	1.4	1.0	1.1	1.6	8
.Millikan experiment	88	.4	.5	2.4	.7	.6	2.6	8
.Motion of a charge - ampere	50	1.3	.9	2.2	.9	1.5	2.5	10
.Ohm's Law - constant resistance	22	1.5	1.0	1.9	1.1	1.6	2.1	6
.Resistance of a conductor	24	1.4	1.0	1.8	1.1	1.6	2.0	6
.D.C. electric circuits	14	1.3	1.0	1.6	1.2	1.6	1.9	10
.Kirchhoff's Laws	10	.5	.8	.7	1.1	.8	.9	6
.Capacitance	12	.4	.7	.6	.8	.5	.7	6

TABLE 11.38 (Cont'd)

SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
ELECTRICITY AND MAGNETISM (Cont'd)										
.Properties of dielectrics	8	.1	.4	.3	.5	.2	.4	.5	.7	4
.Transients (RC circuits)	6	.1	.4	.3	.6	.1	.3	.3	.6	0
.Electric power in DC circuits	18	1.1	1.1	1.6	1.2	1.5	1.1	2.1	1.3	12
.Magnetism	28	1.3	.9	1.7	1.1	1.7	.9	2.1	1.2	12
.Magnetic field	36	1.1	.9	1.8	1.1	1.4	.9	2.2	1.1	12
.Force on moving charge in a magnetic field	32	1.0	.9	1.6	1.1	1.4	.9	2.2	1.1	20
.Ratio of charge to mass of the electron	54	.5	.8	1.7	1.1	.8	.9	2.0	1.1	8
.Magnetic field produced by a moving charge	36	.8	.7	1.4	1.0	1.2	.9	1.9	1.1	16
.Force on a current carrying conductor in a uniform magnetic field	18	.8	.9	1.2	1.1	1.3	1.0	1.7	1.3	14
.Electric meters - galvanometers	8	1.0	1.1	1.0	1.1	1.3	1.1	1.4	1.2	8
.Electric motors	8	.9	1.0	1.0	1.1	1.3	1.1	1.3	1.2	8
.Emf in a conductor moving in a uniform magnetic field	10	.9	.9	1.0	1.2	1.1	1.0	1.4	1.3	6
Lenz' law	10	.4	.6	.5	.6	.6	.8	.7	1.1	6
.Inductance	6	.8	1.0	.9	1.0	1.2	1.1	1.2	1.1	6
.AC generator	6	.8	1.0	.9	1.0	1.2	1.1	1.2	1.1	6
.DC generator	8	.7	.9	.7	.9	.9	1.1	1.1	1.1	4
.AC circuits	10	.9	1.0	1.1	1.1	1.3	1.1	1.4	1.1	6
.Transformers	8	.2	.4	.4	.6	.4	.5	.6	.7	2
.Hysteresis	56	1.0	.7	2.0	.9	1.2	.8	2.2	1.0	16
.Electromagnetic spectrum										
ATOMIC STRUCTURE										
.Thomson model of atom	54	.6	.8	1.5	.8	.8	.9	1.6	1.0	8
.Rutherford scattering experiment	84	.5	.7	2.3	.9	.7	.8	2.5	.9	8
."Solar system" model of atom (Rutherford model)	74	.9	.8	2.2	.8	1.1	.9	2.4	.8	8
.Properties of electron	64	1.0	.8	2.1	.8	1.2	.9	2.3	.9	8
.Photoelectric effect (Photons)	92	.5	.6	2.8	.7	.7	.8	2.9	.8	10
.Compton effect	86	.2	.5	2.1	1.0	.4	.7	2.3	1.0	6
.Particle - wave duality of radiation	90	.4	.5	2.4	.8	.5	.7	2.7	.9	12
.Particle - wave duality of matter (de Broglie)	90	.2	.4	2.5	.8	.3	.6	2.7	.9	4

TABLE 11.38 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
ATOMIC STRUCTURE (Cont'd)										
.Line spectra (historical evidence, Balmer series, etc.)	82	.4	.5	2.2	.9	.5	.7	2.6	.9	8
.Discrete energy levels (Franck - Hertz experiment)	86	.2	.5	2.2	.9	.4	.7	2.6	.8	8
.Energy levels of hydrogen (Bohr model)	84	.3	.5	2.3	.9	.4	.7	2.6	.8	8
NUCLEAR PHYSICS										
.Radioactive decay	24	.8	.7	1.5	1.1	1.1	.8	1.9	1.1	6
.Alpha, beta and gamma radiation; properties and spectra	24	.9	.7	1.4	1.1	1.2	.8	1.7	1.1	8
.Detection of radiation	24	.8	.8	1.2	.9	1.1	.7	1.8	.9	10
.Structure of the nucleus	26	1.1	.7	1.6	1.1	1.2	.8	1.7	.9	8
.Properties of nucleons	14	.5	.7	.9	.9	.8	.8	1.3	1.0	6
.Nuclear reactions - general nature	18	.9	.8	1.2	1.0	1.2	.9	1.6	1.0	6
.Nuclear fission	18	.9	.8	1.2	1.0	1.1	.8	1.6	1.0	8
.Nuclear fusion	18	.9	.8	1.2	1.0	1.1	.8	1.6	1.0	8
.Radiation hazards	16	.6	.6	.9	.7	.9	.6	1.6	.9	8
TEMPERATURE AND HEAT										
.Temperature										
a) scales	0	1.1	1.2	1.4	1.4	1.4	1.4	1.6	1.4	0
b) methods of measurement	0	1.1	1.1	1.3	1.4	1.3	1.4	1.5	1.5	0
.Thermal expansion	0	.9	1.2	1.0	1.4	1.1	1.4	1.3	1.4	2
.Heat										
a) Kinetic theory	6	1.1	1.1	1.7	1.3	1.3	1.2	1.8	1.3	0
b) Maxwellian velocity distribution	4	.4	.7	.8	1.1	.4	.5	.6	.9	0
c) Conversion of mechanical to thermal energy	2	1.1	1.2	1.1	1.3	1.1	1.3	1.3	1.4	0
d) Specific heat	2	1.5	1.3	1.4	1.4	1.6	1.4	1.7	1.5	0
e) Calorimetry	0	1.4	1.3	1.3	1.5	1.4	1.4	1.4	1.5	0
f) Gas laws	2	1.6	1.2	1.4	1.2	1.6	1.2	1.4	1.2	0
g) Change of phase	0	1.4	1.2	1.3	1.4	1.6	1.3	1.3	1.4	0
h) Vapour pressure and humidity	0	1.2	1.2	1.1	1.5	1.2	1.4	1.1	1.5	0
.Heat transfer										
a) Convection	0	.9	1.1	.9	1.3	1.1	1.3	1.1	1.4	0

TABLE 11.38 (Cont'd)
SECONDARY SCHOOL PHYSICS YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY	EXIT	ENTRY	EXIT	
		MEAN	S.D.	MEAN	S.D.	
TEMPERATURE AND HEAT						
.Heat transfer (Cont'd)						
b) Conduction	2	.9	1.0	1.2	1.6	1.1 1.3 1.1 1.4 1.4 0
c) Radiation	0	.9	1.1	.9	1.3	1.1 1.3 1.1 1.4 1.4 0
.Thermodynamics						
a) First Law	2	.2	.4	.3	.5	.2 .4 .3 .5 0
b) Second Law	2	.2	.4	.4	.7	.2 .4 .4 .7 0
c) The Carnot cycle	2	.2	.4	.2	.4	.1 .3 .2 .4 0
PROPERTIES OF SOLIDS OTHER THAN THERMAL						
.Crystallographic properties of simple solids	0	.5	.8	.3	.7	.5 .9 .4 .7 0
.Elastic properties, Hooke's law; moduli and compliances	20	.3	.7	1.7	1.0	.5 .8 1.6 1.1 2
.Electronic properties; band structure; conductors; semi-conductors and insulators	8	.3	.5	.9	.8	.3 .5 .8 .8 0
.Electronic properties, the diode	4	.2	.4	.6	.8	.2 .4 .5 .7 0
.Electronic properties, the transistor	2	.1	.3	.3	.7	.0 .0 .3 .7 0
FLUIDS AT REST AND IN MOTION						
.Density and specific gravity	2	1.6	1.2	1.8	1.3	2.0 1.2 1.9 1.5 0
.Atmospheric pressure - the barometer	0	1.6	1.2	1.8	1.3	2.0 1.2 1.7 1.4 0
.Hydrostatic pressure - Pascal's law	0	1.1	1.0	1.3	1.0	1.4 1.0 1.1 1.1 0
.Archimedes' principle - buoyancy	0	1.5	1.3	1.5	1.4	1.7 1.4 1.4 1.5 0
.Surface tension and capillary action	0	.9	1.3	1.0	1.3	1.3 1.4 1.0 1.4 0
.Fluid flow, continuity conditions	0	.3	1.0	.4	1.1	.4 1.1 .4 1.1 0
.Streamline flow	0	.1	.3	.3	.5	.2 .4 .2 .4 0
.Bernoulli's Principle	2	.6	.7	.7	.8	.5 .6 .5 .6 0
.Turbulent flow	0	.2	.4	.2	.4	.2 .4 .2 .4 0
.Viscosity	0	.3	.7	.3	.8	.3 .8 .3 .8 0
.Poiseuille's Law	0	.0	.0	.0	.0	.0 .0 .0 .0 0
SPECIAL THEORY OF RELATIVITY	26	.2	.4	1.2	1.0	.3 .6 1.2 .8 6
PROPERTIES OF ELEMENTARY PARTICLES (other than proton, neutron or electron)						
OTHER TOPICS (please list and respond appropriately)	8	.2	.4	.6	.7	.2 .4 .6 .5 0

TABLE 11.39
SECONDARY SCHOOL PHYSICS YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
INDICATE TO WHAT EXTENT YOU EXPECT YOUR STUDENTS TO
HAVE THE FOLLOWING MATHEMATICAL SKILLS

	NOT EXPECTED ¹		EXPECTED NOT COMPETENT ¹		EXPECTED COMPETENT ¹		TOTAL
	N	%	N	%	N	%	
Ability to use concepts of ratio and proportion	6	15	30	73	5	12	41
Use of logarithms	35	86	5	12	1	2	41
Use of exponential functions	33	81	7	17	1	2	41
Ability to convert degrees to radians	38	93	2	5	1	2	41
Use of trigonometric functions	26	63	10	25	5	12	41
Use of trigonometric identities	38	93	3	7	-	-	41
Manipulation of linear equations	6	15	25	61	10	24	41
Ability to solve simultaneous linear equations	25	61	15	37	1	2	41
Ability to find the roots of a quadratic equations	38	93	3	7	-	-	41
Ability to differentiate simple functions	37	90	4	10	-	-	41
Ability to integrate simple functions	39	95	2	5	-	-	41
Ability to manipulate vectors	33	80	8	20	-	-	41
Facility with vector algebra	40	98	1	2	-	-	41
Ability to apply the binomial expansion	41	100	-	-	-	-	41

¹RESPONSE KEY: 0 - Students are not expected to have this skill
1 - Students are expected to have this skill,
but most are not competent
2 - Students are expected to have this skill,
and most are competent

TABLE 11.40
SECONDARY SCHOOL PHYSICS YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT YOU EXPECT YOUR STUDENTS TO
HAVE THE FOLLOWING MATHEMATICAL SKILLS"

	NOT EXPECTED ¹		EXPECTED NOT COMPETENT ¹		EXPECTED COMPETENT ¹		TOTAL
	N	%	N	%	N	%	
Ability to use concepts of ratio and proportion	4	8	30	60	16	32	50
Use of logarithms	46	92	4	8	-	-	50
Use of exponential functions	38	76	10	20	2	4	50
Ability to convert degrees to radians	46	92	3	6	1	2	50
Use of trigonometric functions	23	46	23	46	4	8	50
Use of trigonometric identities	44	88	5	10	1	2	50
Manipulation of linear equations	5	10	22	44	23	46	50
Ability to solve simultaneous linear equations	20	40	23	46	7	14	50
Ability to find the roots of a quadratic equation	36	72	12	24	2	4	50
Ability to differentiate simple functions	47	94	3	6	-	-	50
Ability to integrate simple functions	49	98	1	2	-	-	50
Ability to manipulate vectors	28	56	17	34	5	10	50
Facility with vector algebra	40	80	8	16	2	4	50
Ability to apply the binomial expansion	50	100	-	-	-	-	50

¹ RESPONSE KEY: 0 - Students are not expected to have this skill
1 - Students are expected to have this skill,
but most are not competent
2 - Students are expected to have this skill,
and most are competent

TABLE 11.41
 SECONDARY SCHOOL PHYSICS YEAR 5
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE TO WHAT EXTENT YOU EXPECT YOUR STUDENTS TO
 HAVE THE FOLLOWING MATHEMATICAL SKILLS"

	NOT EXPECTED ¹		EXPECTED NOT COMPETENT ¹		EXPECTED COMPETENT ¹		TOTAL
	N	%	N	%	N	%	
Ability to use concepts of ratio and proportion	3	6	22	44	25	50	50
Use of logarithms	29	58	15	30	6	12	50
Use of exponential functions	32	64	12	24	6	12	50
Ability to convert degrees to radians	33	66	10	20	7	14	50
Use of trigonometric functions	3	6	13	26	34	68	50
Use of trigonometric identities	30	60	14	28	6	12	50
Manipulation of linear equations	2	4	11	22	37	74	50
Ability to solve simultaneous linear equations	3	6	18	36	29	58	50
Ability to find the roots of a quadratic equation	7	14	18	36	25	50	50
Ability to differentiate simple functions	41	82	6	12	3	6	50
Ability to integrate simple functions	45	90	3	6	2	4	50
Ability to manipulate vectors	14	28	22	44	14	28	50
Facility with vector algebra	30	60	14	28	6	12	50
Ability to apply the binomial expansion	48	96	2	4	-	-	50

¹ RESPONSE KEY: 0 - Students are not expected to have this skill
 1 - Students are expected to have this skill
 but most are not competent
 2 - Students are expected to have this skill,
 and most are competent

TABLE 12.1
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																				TOTAL	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20+
Teaching at community college	0	0	1	0	4	1	4	10	9	4	3	0	1	0	0	0	1	0	0	0	0	38
Teaching this course (or its equivalent)	0	3	5	6	6	2	5	4	2	4	0	0	0	0	0	0	1	0	0	0	0	38
Related professional (non-teaching) Experience	3	2	4	1	1	2	1	2	2	2	3	1	5	0	1	2	2	1	1	0	2	38

TABLE 12.2
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	18	53
Elementary	0	0
Secondary	8	23
University	3	9
Other	3	9
More than one other	2	6
Total	34	100

TABLE 12.3
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1	
	N	%
Doctorate	1	3
Master's	15	40
Honour Bachelor's (4 year)	14	38
Bachelor's	6	16
Post-Secondary Diploma	1	3
Other	0	0
Total	37	100

TABLE 12.4
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHER'S POSITION IN SCHOOL

	YEAR 1	
	N	%
Teaching Master	38	100
Instructor	0	0
Counsellor	0	0
Other	0	0
Total	38	100

TABLE 12.5
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 1	
	N	%
Yes, it is my area	16	42
Yes, it is closely related	18	47
No	4	11
Total	38	100

TABLE 12.6

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
 INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great			Moderate			Small			Not At			TOTAL
	Extent	N	%	Extent	N	%	Extent	N	%	All	N	%	
Interests of students	8	23	19	56	5	15	2	6	34				
Knowledge of subject of incoming students	16	43	11	29	5	14	5	14	37				
Relationship between this course and others taken concurrently	17	46	11	30	9	24	-	-	37				
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	19	50	11	29	5	13	3	8	38				
Ontario Ministry of Education guidelines	2	8	3	11	2	8	19	73	26				
Course outline assigned to you	13	40	11	34	4	13	4	13	32				
Special interests or training you might have	9	24	18	47	8	21	3	8	38				
Content and approach of principal text(s)	9	27	13	40	9	27	2	6	33				
Staffing	4	15	3	12	3	12	16	61	26				
Other	2	7	2	7	1	3	24	83	29				

TABLE 12.7

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 1	
	N	%
Yes	25	68
No	12	32
Total	37	100

TABLE 12.8

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
Excellent	0	0
Good	3	8
Fair	27	7
Poor	8	21
Total	38	100

TABLE 12.9

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS

	YEAR 1	
	N	%
A Great Deal	33	84
A Moderate Amount	4	13
Very Little	1	3
Do Not Know	0	0
Total	38	100

TABLE 12.10

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO **PROGRESS** AT INDIVIDUAL RATES?"

	YEAR 1	
	N	%
Great Extent	3	8
Moderate Extent	3	8
Small Extent	8	21
Not at all	24	63
Total	38	100

TABLE 12.11

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO

EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	6	16	9	24	6	16	7	18	4	10	4	10	1	3	1	3	38	22.4	19.3
Socratic (question and answer technique, interaction between student and instructor)	7	18	16	42	5	13	1	3	1	3	5	13	1	3	2	5	38	19.0	22.7
Demonstrations	11	29	25	65	1	3	1	3	-	-	-	-	-	-	-	-	38	5.3	5.7
Laboratory work, experiments	9	24	4	10	3	8	8	21	10	26	3	8	-	-	1	3	38	25.4	20.8
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	13	34	13	34	6	15	3	8	1	3	-	-	1	3	1	3	38	11.7	16.4
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	31	82	4	10	3	8	-	-	-	-	-	-	-	-	-	-	38	2.4	5.8
Seminar, tutorial (with or without additional instructors' this technique may include student presentations)	30	79	7	18	1	3	-	-	-	-	-	-	-	-	-	-	38	1.6	4.0
Small group activities (with the instructor supervising a number of small groups)	33	87	5	13	-	-	-	-	-	-	-	-	-	-	-	-	38	.9	2.4
Student presentations (exclusive of seminars, tutorials)	35	92	3	8	-	-	-	-	-	-	-	-	-	-	-	-	38	.4	1.4

TABLE 12.11 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO

EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL MEAN	S.D.	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Testing	2	5	27	71	8	21	-	-	-	-	-	-	1	3	-	-	38	10.1	9.2
Audiovisual (television, tapes, films, etc.)	15	39	22	58	1	3	-	-	-	-	-	-	-	-	-	-	38	3.4	4.2
Field trips, visits by resource personnel	35	92	3	8	-	-	-	-	-	-	-	-	-	-	-	-	38	.3	1.1
Other	35	92	1	3	2	5	-	-	-	-	-	-	-	-	-	-	39	.8	3.3

TABLE 12.12
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent			Moderate Extent			Small Extent			Not At All			TOTAL
	N	%		N	%		N	%		N	%		
Main text	19	53		11	31		2	5		4	11		36
Main text plus supplementary text(s)	5	14		4	11		8	22		19	53		36
Two or more main texts or materials from other texts	4	12		6	17		3	9		21	62		34
Laboratory equipment	18	49		8	22		6	16		5	13		37
Mimeographed materials (lecture notes, etc.)	13	34		13	34		8	21		4	11		38
Reference books, dictionaries, encyclopedias, journals etc.	1	3		1	3		24	65		11	29		37
Individualized learning packages	2	6		-	-		3	8		31	86		36
Audiovisual media (television, tapes, film strips, etc.)	1	3		4	11		12	32		20	54		37
Other	3	8		-	-		1	3		31	89		35

TABLE 12.13

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"HOW MUCH TIME IS NORMALLY SPENT ON
REVIEW OF MATERIAL TAKEN PRIOR TO THIS COURSE

	YEAR 1	
	N	%
0%	10	26
1-10%	14	37
11-20%	6	16
21-30%	2	5
31-40%	1	3
41-50%	5	13
51-75%	-	-
76+%	-	-
Total	38	100

TABLE 12.14

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1	
	N	%
0%*	1	3
1-25%	2	5
26-50%	13	34
51-75%	2	5
76-100%	12	32
101-150%	3	8
151-200%	2	5
201%+	3	8
Total	38	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200

TABLE 12.15

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 1	
	N	%
Yes	9	24
No	13	34
Not applicable	16	42
Total	38	100

TABLE 12.16

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final Examination*	28	73	5	13	-	-	3	8	1	3	1	3	-	-	-	-	38	5.7	12.2
Mid-term examination	34	89	2	5	1	3	1	3	-	-	-	-	-	-	-	-	38	1.6	5.5
Other written tests	8	21	3	8	2	5	5	13	5	13	2	5	8	21	5	13	38	38.4	29.5
Other oral tests	36	94	1	3	1	3	-	-	-	-	-	-	-	-	-	-	38	.8	3.5
Problems, exercises	22	58	6	16	7	18	1	3	2	5	-	-	-	-	-	-	38	8.0	11.3
Laboratory reports and/or notebooks	13	34	3	8	4	10	3	8	12	32	2	5	1	3	-	-	38	21.9	19.0
Laboratory and/or other class participation	31	81	3	8	1	3	2	5	1	3	-	-	-	-	-	-	38	3.7	8.9
Individual papers (essays, reports, etc.)	34	89	1	3	1	3	1	3	-	-	-	-	-	-	1	3	38	4.0	16.5
Group or team papers, projects	38	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	.0	.0
Individual projects (exclusive of essays, reports)	37	97	-	-	1	3	-	-	-	-	-	-	-	-	-	-	38	.4	2.4
Effort	30	79	5	13	3	8	-	-	-	-	-	-	-	-	-	-	38	2.8	6.0
Attendance	33	87	2	5	2	5	-	-	1	3	-	-	-	-	-	-	38	2.2	7.2
Other	29	76	3	8	3	8	-	-	-	-	-	-	1	3	2	5	38	8.4	23.9

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 12.17
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little		Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
The student should acquire an attitude of scientific curiosity	13	34	18	47	6	16	1	3	38	2.4	.7
The student should be able to think rationally and in particular be able to:											
. organize data presented in a problem and arrive at a solution	30	79	5	13	2	5	1	3	38	2.7	.7
. evaluate in empirical terms reports of observed phenomena	14	37	11	29	7	18	6	16	38	1.9	1.0
The student should understand the scientific method	11	29	17	45	6	16	4	10	38	1.9	.9
The student should be able to apply the scientific method to the study of the behaviour of matter under the influence of the forces of nature and to the study of the properties of those forces including:											
. the ability to design and set up an experiment	6	17	9	26	13	37	7	20	35	1.4	1.0
. the ability to collect experimental data	18	52	7	20	4	11	6	17	35	2.1	1.1
. the ability to organize and analyze experimental data	19	55	6	17	4	11	6	17	35	2.1	1.1
. the ability to interpret the results of experiments in terms of mathematics and/or physical models	12	34	9	26	8	23	6	17	35	1.8	1.1
. the ability to communicate the results of experiments consisely, critically and profitably with knowledge and understanding	17	49	8	23	6	17	4	11	35	2.1	1.1

TABLE 12.17 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INDICATE THE DEGREE OF EMPHASIS GIVEN

TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little		No		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
The student should recognize technological and engineering activities as applications of the principles of physics and aim to understand these activities in such terms	21	55	15	40	2	5	-	-	38	2.5	.6
The student should be aware of the historical development of ideas and concepts in physics and the evolving nature of its theories	-	-	12	32	21	55	5	13	38	1.2	.6

TABLE 12.18
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Measurement	8	21	14	37	11	29	2	5	3	8	-	-	-	-	38	6.2	4.7
Functions	16	42	15	40	7	18	-	-	-	-	-	-	-	-	38	2.8	3.1
Motion (Kinematics)	13	34	7	18	9	24	3	8	5	13	1	3	-	-	38	6.9	6.6
Newton's Laws of Motion - Dynamics of a Particle	12	32	8	21	8	21	7	18	2	5	1	3	-	-	38	7.4	6.2
Statics	22	58	9	24	3	8	4	10	-	-	-	-	-	-	38	3.2	4.4
Newton's Laws of Motion - Dynamics of a Rigid Body	18	47	9	24	7	18	3	8	1	3	-	-	-	-	38	4.2	5.0
Gravity - Near the Earth's Surface	12	32	19	50	5	13	2	5	-	-	-	-	-	-	38	3.2	3.2
Universal Gravitation	22	58	13	34	3	8	-	-	-	-	-	-	-	-	38	1.7	2.3
Momentum	18	47	12	32	7	18	1	3	-	-	-	-	-	-	38	2.7	3.2
Work, Energy and Power	9	24	6	16	17	45	3	8	2	5	1	2	-	-	38	6.7	5.2
Vibrations and Waves	19	50	3	8	7	18	3	8	3	8	2	5	1	3	38	6.2	7.4
How Light Behaves	17	44	1	3	8	21	5	13	5	13	1	3	1	3	38	7.7	7.7
Interference and Diffraction	19	50	6	16	6	16	4	10	2	5	-	-	1	3	38	5.5	11.8
Electricity and Magnetism	31	81	2	5	1	3	3	8	-	-	-	-	1	3	38	2.5	6.6
Atomic Structure	28	74	5	13	1	3	1	3	-	-	1	3	2	5	38	3.0	6.9
Nuclear Physics	27	71	5	13	2	5	2	5	1	3	1	3	-	-	38	3.2	6.4
Temperature and Heat	16	42	1	2	5	13	6	16	4	11	2	5	4	11	38	10.0	10.6
Properties of Solids other than Thermal	23	60	12	32	2	5	-	-	-	-	-	-	1	3	38	2.6	6.7
Fluids at Rest and in Motion	23	60	5	13	6	16	2	5	-	-	1	3	1	3	38	3.9	6.5
Special Theory of Relativity	32	84	4	10	1	3	-	-	-	-	-	-	1	3	38	1.4	5.5

TABLE 12.18 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Properties of Elementary Particles	37	97	1	3	-	-	-	-	-	-	-	-	-	-	38	.0	.1
Other Topics	32	84	2	5	3	8	1	3	-	-	-	-	-	-	38	1.1	2.9

TABLE 12.19
COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
MEASUREMENT										
.Mass, length and time (fundamental quantities)	74	.8	.5	2.2	.7	1.6	.6	2.7	.7	50
.Errors	74	.3	.5	2.0	.7	1.3	.7	2.7	.7	50
.Accuracy and precision (significant figures,"rounding off")	76	.4	.5	2.0	.8	1.6	.9	2.6	.8	50
.SI	71	.6	.6	2.1	.8	1.4	.7	2.5	.9	42
.Development of relations relating physical quantities by dimensional analysis	68	.2	.4	1.9	.8	1.2	.9	2.6	.9	39
.Dimensional consistency of equations relating physical quantities	74	.3	.4	2.0	.7	1.1	.7	2.7	.8	42
FUNCTIONS										
Given a table of experimental data:										
.Plotting and properly labelling a graph of the data	55	.6	.5	2.1	.7	1.6	.7	2.6	.8	42
.Writing the equation of a linear relation	42	.4	.5	1.9	.8	1.5	.7	2.5	.9	34
.Replotting a non-linear relation to obtain a straight line and writing the relation	29	.1	.3	1.4	.9	.9	.6	2.1	1.2	29
.Plotting a power law relation on log-log paper and writing the relation	13	.0	.0	.6	.8	.4	.5	1.1	1.5	11
.Plotting an exponential relation on semi-log paper and writing the relation	16	.0	.0	.8	.9	.5	.5	1.3	1.3	16
MOTION (Kinematics)										
.Motion with constant acceleration in one, two, or three dimensions	61	.5	.5	2.3	.8	1.2	.8	2.6	.9	34
.Straight line kinematics with uniform acceleration	63	.6	.5	2.5	.6	1.4	.8	2.9	.7	34
.Straight line kinematics with non-uniform acceleration	39	.2	.4	1.7	1.2	1.0	.9	2.1	1.5	29
.Two-dimensional kinematics with uniform acceleration (e.g., projectile motion)	47	.1	.4	2.0	1.1	.7	.8	2.4	1.1	26
.Two-dimensional kinematics with non-uniform acceleration (e.g., circular motion)	29	.1	.3	1.6	1.3	.8	.8	1.9	1.3	24
.Three-dimensional kinematics with uniform acceleration	3	.1	.3	.2	.8	.2	.6	.3	1.2	3
.Three-dimensional kinematics with non-uniform acceleration	3	.1	.3	.2	.8	.2	.6	.3	1.2	3

^aThe means in this table are based on a response key which ranges from 0-indicating No Knowledge to 4-Advanced. See physics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 12.19 (Cont'd)

COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
NEWTON'S LAWS OF MOTION - DYNAMICS OF A PARTICLE										
.Newton's first law, mass and inertia	68	.6	.6	2.4	.6	1.2	.8	2.8	.8	34
.Newton's second law	68	.6	.6	2.5	.6	1.3	.8	3.0	.6	34
.Newton's third law	68	.6	.5	2.4	.7	1.1	.7	2.9	.6	26
.Resolution and summation of forces by scale drawing	53	.4	.5	2.2	1.0	1.2	1.0	2.6	.9	32
.Resolution and summation of forces by analytical methods	47	.2	.4	2.3	.9	1.0	1.0	2.6	1.1	26
.Frames of reference	34	.2	.4	1.0	.8	.8	.9	1.4	1.2	18
.Pseudo forces	13	.1	.3	.7	1.0	.4	.7	1.0	1.3	8
.Dynamics of circular motion	37	.2	.4	1.9	1.0	.9	.8	2.5	1.1	29
STATICS										
.Moments	39	.2	.4	2.4	.6	.9	.8	2.8	.6	21
.Laws of equilibrium	39	.1	.4	2.4	.6	1.0	.9	2.9	.7	24
.Simple machines, the lever, the incline plane, pulleys	29	.3	.5	1.8	1.2	1.3	.8	2.4	1.0	24
NEWTON'S LAWS OF MOTION - DYNAMICS OF A RIGID BODY										
.Translational motion	42	.6	.5	2.0	1.1	1.1	.8	2.5	1.2	24
.Rotational motion, torque, moment of inertia, angular acceleration	32	.1	.4	1.8	1.2	.7	.8	2.1	1.3	18
.Combined translational and rotational motion	13	.2	.4	1.0	1.3	.4	.8	1.3	1.5	8
.Friction	42	.4	.5	2.4	.8	1.2	.9	2.5	1.0	29
GRAVITY -NEAR THE EARTH'S SURFACE										
.Distinction between gravitational and inertial mass; principle of equivalence	55	.3	.5	1.9	1.0	1.1	.7	2.5	.9	37
.Weight and acceleration due to gravity	66	.6	.5	2.3	.7	1.3	.5	2.8	.6	39
.The dynamics of projectile motion (no air resistance)	42	.2	.4	2.0	1.2	.8	.6	2.4	1.0	26
.The dynamics of projectile motion (air resistance)	16	.1	.3	.7	1.1	.5	.8	1.0	1.3	13
.Dependence of g on distance from centre of earth or on latitude	50	.3	.5	1.8	.9	1.0	.7	2.1	1.0	29

TABLE 12.19 (Cont'd)
COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
UNIVERSAL GRAVITATION										
.Ptolemy, Copernicus, Kepler	11	.1	.3	.5	.8	.3	.7	.7	1.2	3
.Kepler's Laws	8	.1	.3	.4	.9	.4	.7	.7	1.2	5
.Universal law of gravitation	34	.2	.4	1.6	1.1	.6	.8	1.9	1.4	13
.Circular orbits	32	.1	.3	1.5	1.2	.5	.7	1.6	1.5	13
.General motion under a central force	24	.1	.3	1.2	1.2	.5	.7	1.5	1.4	13
MOMENTUM										
.Impulse and momentum	55	.1	.4	2.3	.7	.9	.7	2.7	.7	29
.Conservation of linear momentum	55	.3	.6	2.3	.6	.9	.8	2.7	.7	18
.Elastic collisions (in one dimension)	47	.2	.5	2.0	1.0	.7	.8	2.5	.6	18
.Inelastic collisions (in one dimension)	39	.1	.2	1.8	1.1	.6	.8	2.3	1.0	16
.Collisions of bodies in two dimensions	16	.1	.3	.9	1.3	.5	.7	1.2	1.5	8
.Angular momentum	21	.1	.3	1.2	1.2	.6	.7	1.6	1.2	13
.Conservation of angular momentum	16	.0	.0	.9	1.1	.2	.4	1.0	1.2	5
.Precession	5	.0	.0	.2	.4	.1	.3	.6	1.1	3
WORK, ENERGY AND POWER										
.Work done by a constant force	76	.5	.6	2.4	.7	1.2	.8	2.8	.6	42
.Work done by a non-constant force (e.g., $F=kx$)	50	.3	.5	1.8	1.1	1.0	.8	2.5	1.1	34
.Work done by a non-constant force (e.g., $F=1/r^2$)	18	.1	.3	.7	1.1	.4	.7	1.1	1.4	11
.Work performed by compressing a gas	29	.1	.3	1.0	1.1	.4	.6	1.7	1.5	13
.Kinetic energy and its relation to the work	74	.5	.6	2.4	.6	1.3	.7	2.8	.6	47
.Potential energy (constant force [e.g., mgh])	71	.4	.5	2.3	.5	1.2	.7	2.7	.6	42
.Potential energy (non-constant force [e.g., $\frac{1}{2}kx^2$ or $\frac{Gm_1m_2}{r}$])	24	.2	.4	1.1	1.2	.8	.8	1.7	1.4	21
.Conservation of mechanical energy (transformations between kinetic and potential energy)	68	.3	.5	2.4	.6	1.1	.8	2.7	.7	39
.Power	68	.4	.5	2.3	.7	1.2	.8	2.8	.7	37
.Efficiency of work	55	.3	.5	2.0	1.0	1.1	.8	2.6	.9	37

TABLE 12.19 (Cont'd)

COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
VIBRATIONS AND WAVES										
.Vibrations										
.Kinematic description of SHM, ($y = A \sin \omega t$ or reference circle)	39	.6	.7	2.1	.9	1.1	.9	1.9	1.0	16
.Motion under a harmonic force ($F = -kx$)	32	.3	.6	2.0	1.2	.9	.7	2.1	1.1	21
.Solutions of the equation of motion for an oscillating system (Newton's second law)	32	.4	.6	2.0	1.2	.8	.8	2.2	1.0	16
.Mass on a spring	18	.5	.9	1.8	1.5	.2	.4	1.4	1.4	3
.Simple pendulum (in small angle approximation)	32	.4	.7	2.1	1.2	.8	.8	2.2	1.3	18
.Rigid pendulum (in small angle approximation)	34	.4	.6	2.1	1.2	1.0	.7	2.3	1.3	21
.Torsional oscillations	8	.2	.4	.8	1.3	.4	.7	1.5	1.7	3
.Conservation of energy in undamped oscillations	5	.1	.4	.3	.7	.1	.4	1.1	1.2	0
.Exponential decay of oscillations	18	.2	.4	1.5	1.1	.9	.8	1.6	1.2	11
.Derivation of the differential wave equation for compressional waves in a gas or transverse waves on a string	5	.1	.4	.3	.7	.1	.4	.6	.8	0
.Relation between frequency, wavelength and velocity ($v = f\lambda$)	5	.0	.0	.4	.9	.1	.4	.7	1.3	3
.Waves propagated in one dimension	47	.5	.7	2.4	.8	1.3	.8	2.6	1.0	26
.Waves propagated in two dimensions	50	.4	.5	2.2	.8	1.3	.7	2.6	.8	29
.Polarization	21	.3	.5	1.1	1.0	.7	.7	1.5	1.1	13
.Doppler effect	37	.3	.5	1.7	.9	.5	.8	1.9	1.1	11
.Shock waves	42	.2	.4	2.0	1.0	.6	.8	2.3	1.3	13
.Energy carried by a wave in one dimension	24	.2	.4	.9	.8	.3	.7	1.3	1.1	5
.Relative and absolute intensity of sound waves (decibels)	29	.3	.5	1.9	1.1	.7	.9	1.9	1.4	11
.Energy radiated by a point source (inverse square law)	39	.2	.4	1.9	1.0	.9	.8	2.7	.8	21
	39	.2	.4	1.7	1.0	.9	.8	2.6	1.1	24
HOW LIGHT BEHAVES										
.Qualitative discussion of light sources	50	.6	.5	1.8	.8	1.1	.7	2.2	1.0	18
.Rectilinear propagation of light waves	47	.7	.7	2.0	.8	1.3	.6	2.6	.9	21
.Concept of a wave front	39	.3	.5	1.4	.9	.8	.7	1.9	1.2	21
.Huygens' principle	29	.2	.4	1.4	1.1	.7	.6	1.6	1.3	16
.Reflection of waves at a plane boundary	47	.7	.7	2.0	.8	1.3	.7	2.6	.8	21
.Reflection of waves at a spherical boundary	47	.4	.5	1.8	1.0	1.1	.8	2.5	1.0	29

TABLE 12.19 (Cont'd)
COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
HOW LIGHT BEHAVES (Cont'd)										
.Convex and concave mirrors										
a) scale drawings	50	.6	.6	2.1	.9	1.2	1.0	2.5	.9	21
b) analytical treatment	50	.3	.6	2.0	.7	1.0	.9	2.4	.9	24
.Refraction of waves at a plane interface between two media	50	.4	.5	2.1	.8	1.2	.8	2.5	.9	29
.Concept of refractive index (Snell's law)	53	.5	.5	2.1	.7	1.2	.7	2.4	.9	26
.Total internal reflection	47	.3	.5	2.1	.9	.9	.8	2.5	.9	26
.Refraction by a prism	47	.5	.5	1.9	.9	1.2	.8	2.4	1.1	21
.Prism spectrometer - minimum deviation	29	.2	.4	1.4	1.1	.7	.7	1.9	1.4	18
.Dispersive power of a medium	37	.4	.5	1.4	1.1	.7	.7	1.9	1.3	16
.Refraction at a spherical interface	32	.3	.5	1.4	1.0	.6	.6	1.7	1.1	16
.The lensmaker's equation	32	.2	.4	1.5	1.0	.7	1.0	2.1	1.2	13
.The thin lens equation	42	.4	.7	1.9	.7	1.0	.9	2.4	.9	13
Formation of images by lenses										
a) scale drawings	53	.4	.5	2.1	.8	1.1	.8	2.5	1.0	29
b) analytical treatment	50	.3	.5	2.0	.9	1.1	.9	2.5	1.1	29
.Power of a lens	34	.1	.3	1.5	1.0	.8	.8	1.9	1.3	21
.Chromatic aberration	42	.1	.3	1.6	.9	.9	.7	2.1	1.1	24
.Monochromatic aberrations	39	.1	.3	1.4	.9	.7	.7	1.9	1.2	21
.The eye and the camera	39	.3	.5	1.6	.9	1.0	.8	2.3	1.2	24
.Eye defects and corrective lenses	32	.2	.4	1.6	1.1	.9	.9	2.2	1.3	18
.Simple and compound microscopes	42	.2	.4	1.7	.9	.8	.7	2.1	1.1	24
.The telescope	42	.2	.4	1.7	.9	.8	.8	2.1	1.2	24
INTERFERENCE AND DIFFRACTION										
.Superposition of pulses and/or waves	39	.2	.4	1.8	.9	.7	.7	2.1	.9	16
.Reflection and transmission of pulses and waves at a boundary	37	.1	.4	1.8	.9	.7	.8	1.9	1.0	16
.Standing waves on a string, ends fixed	47	.3	.6	1.9	.8	.8	.8	2.3	.9	21
.Standing waves in a pipe, both ends open	37	.4	.6	1.9	.9	.8	.8	2.1	1.0	13
.Standing waves in a pipe, one end open, one end closed	39	.4	.6	2.1	.8	.9	.9	2.3	.9	16

TABLE 12.19 (Cont'd)
COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		ENTRY		EXIT		ENTRY		EXIT			
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.		
INTERFERENCE AND DIFFRACTION (Cont'd)											
.Interference of periodic waves, two point sources in a two-dimensional medium	37	.1	.3	1.5	1.0	.6	.7	1.9	1.1	16	
.Interference effects produced by a double slit (Young's double slit)	37	.2	.4	1.8	.8	.8	.7	2.2	.9	16	
.Interference effects produced by a multiple slit	32	.1	.3	1.9	.9	.6	.7	2.2	1.0	13	
.Fraunhofer diffraction by a straight edge	18	.1	.3	1.3	1.1	.4	.8	1.7	1.1	5	
.Fraunhofer diffraction by a single slit (single slit interference)	21	.1	.3	1.5	1.1	.5	.8	1.9	1.1	8	
.Fraunhofer diffraction by a circular aperture	11	.0	.0	.9	1.1	.2	.4	1.5	1.1	3	
.Fraunhofer diffraction by a grating	21	.1	.3	1.3	1.2	.4	.7	1.9	1.1	8	
.Rayleigh resolution criterion	11	.0	.0	1.1	1.2	.2	.5	1.6	1.1	3	
.Resolving power of a grating	5	.0	.0	.7	1.3	.2	.5	1.0	1.4	3	
.Grating spectrometer	34	.0	.0	1.9	.7	.8	1.0	2.6	.7	16	
.Fresnel diffraction	11	.0	.0	.7	.9	.2	.4	1.3	1.2	3	
.Interference effects in parallel thin films	13	.0	.0	1.4	1.2	.3	.5	1.9	1.1	5	
.Michelson interferometer	8	.0	.0	.8	.9	.2	.4	1.3	1.2	3	
.Interference effects in wedge-shaped thin films	18	.0	.0	1.6	1.1	.5	.8	2.0	1.1	8	
ELECTRICITY AND MAGNETISM											
.Electrostatics	8	.0	.0	1.0	1.0	.3	.5	.8	1.0	3	
.Electric force (Coulomb's law)	11	.0	.0	1.4	.9	.3	.5	1.3	1.0	3	
.Electric field	11	.0	.0	1.4	.9	.3	.5	1.3	1.0	3	
.Electric potential energy	16	.0	.0	1.6	.8	.3	.5	1.5	.8	5	
.Electric potential difference - volt	16	.1	.4	1.7	1.0	.3	.5	1.7	1.0	3	
.Sources of emf	8	.0	.0	1.2	1.1	.3	.5	1.0	1.2	3	
.Millikan experiment	0	.0	.0	.0	.0	.3	.5	.5	1.0	3	
.Motion of a charge - ampere	13	.4	.8	1.6	1.0	.5	.8	1.5	1.1	0	
.Ohm's law - constant resistance	11	.5	.8	2.0	1.1	.8	1.3	2.0	1.1	3	
.Resistance of a conductor	13	.5	.8	2.0	1.1	.7	1.2	2.0	1.1	3	
.D.C. electric circuits	11	.3	.8	1.8	1.6	.5	.8	2.0	1.7	3	
.Kirchhoff's Laws	5	.0	.0	1.0	1.2	.0	.0	1.3	1.5	0	
.Capacitance	8	.0	.0	.8	.8	.0	.0	.8	1.0	0	

TABLE 12.19 (Cont'd)
COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	EXIT	ENTRY	S.D.	MEAN	
ELECTRICITY AND MAGNETISM (Cont'd)								
.Properties of dielectrics	5	.0	.0	.6	.9	.0	.5	0
.Transients (RC circuits)	0	.0	.0	.0	.0	.0	.3	0
.Electric power in DC circuits	8	.0	.0	1.3	1.5	.2	1.3	3
.Magnetism	11	.2	.5	1.2	.8	.3	1.0	3
.Magnetic field	11	.0	.0	1.4	.9	.3	1.3	3
.Force on moving charge in a magnetic field	11	.0	.0	1.6	.9	.0	1.5	0
.Ratio of charge to mass of the electron	8	.0	.0	1.0	1.0	.2	1.0	3
.Magnetic field produced by a moving charge	8	.0	.0	1.0	1.0	.0	.8	0
.Force on a current carrying conductor in a uniform magnetic field	11	.0	.0	1.4	.9	.0	1.3	0
.Electric meters - galvanometers	11	.1	.4	1.1	1.1	.3	1.3	3
.Electric motors	8	.0	.0	1.2	1.1	.0	1.0	0
.Emf in a conductor moving in a uniform magnetic field Lenz' law	11	.0	.0	1.2	.8	.0	1.0	0
.Inductance	3	.0	.0	.5	1.0	.0	.5	0
.AC generator	5	.0	.0	.8	1.1	.0	.5	0
.DC generator	5	.0	.0	.8	1.1	.0	.5	0
.AC circuits	0	.0	.0	.0	.0	.0	.5	0
.Transformers	5	.0	.0	.8	1.1	.0	.5	0
.Hysteresis	5	.0	.0	.6	.9	.0	.8	0
.Electromagnetic spectrum	11	.0	.0	1.8	1.3	.4	1.8	5
ATOMIC STRUCTURE								
.Thomson model of atom	5	.3	.5	.7	.5	.4	.6	0
.Rutherford scattering experiment	5	.0	.0	.4	.6	.3	.5	3
."Solar system" model of atom (Rutherford model)	11	.3	.5	.9	.7	.7	1.5	5
.Properties of electron	13	.3	.5	1.0	.8	.6	1.6	5
.Photoelectric effect (Photons)	16	.0	.0	1.1	1.0	.4	1.7	8
.Compton effect	5	.0	.0	.7	1.2	.0	1.0	0
.Particle - wave duality of radiation	13	.4	.5	1.1	1.0	.6	1.9	8
.Particle - wave duality of matter (de Broglie)	13	.1	.4	.9	1.0	.6	1.7	8

TABLE 12.19 (Cont'd)

COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
ATOMIC STRUCTURE (Cont'd)										
.Line spectra (historical evidence, Balmer series, etc.)	16	.0	.0	1.0	.8	.3	.5	1.6	1.3	5
.Discrete energy levels (Franck - Hertz experiment)	11	.0	.0	.6	.5	.3	.5	1.5	1.4	5
.Energy levels of hydrogen (Bohr model)	16	.0	.0	1.0	.8	.4	.5	1.7	1.3	8
NUCLEAR PHYSICS										
.Radioactive decay	26	.0	.0	1.1	1.0	.5	.5	1.6	1.3	13
.Alpha, beta and gamma radiation; properties and spectra	18	.1	.3	.9	.9	.4	.5	1.5	1.2	8
.Detection of radiation	13	.1	.3	.9	.9	.4	.5	1.7	1.2	8
.Structure of the nucleus	24	.3	.5	1.1	1.0	.6	.5	1.7	1.2	8
.Properties of nucleons	16	.1	.3	.9	1.0	.4	.5	1.5	1.3	5
.Nuclear reactions - general nature	21	.1	.3	1.0	.7	.4	.5	1.6	1.3	8
.Nuclear fission	24	.0	.0	1.2	.8	.3	.5	1.6	1.2	8
.Nuclear fusion	21	.0	.0	1.2	.9	.3	.5	1.7	1.2	8
.Radiation hazards	18	.2	.4	.9	.8	.4	.5	1.8	1.5	5
TEMPERATURE AND HEAT										
.Temperature										
a) scales	61	.8	.5	2.4	.6	1.3	.7	2.8	.7	29
b) methods of measurement	63	.8	.5	2.2	.7	1.2	.8	2.6	.8	24
.Thermal expansion	55	.6	.6	2.3	.8	1.1	.7	2.8	.7	26
.Heat										
a) Kinetic theory	42	.4	.5	1.7	.9	.9	.7	2.1	1.1	18
b) Maxwellian velocity distribution	13	.0	.0	.5	.7	.2	.4	1.0	.9	5
c) Conversion of mechanical to thermal energy	61	.4	.5	2.3	.6	1.0	.9	2.7	.7	29
d) Specific heat	61	.5	.5	2.4	.7	1.1	.9	2.8	.7	29
e) Calorimetry	55	.5	.5	2.3	.8	1.2	.8	2.8	1.0	32
f) Gas laws	58	.4	.5	2.1	.8	1.2	.8	2.7	.7	32
g) Change of phase	50	.4	.5	2.2	.7	.9	.6	2.5	.9	21
h) Vapour pressure and humidity	42	.2	.4	1.6	1.2	.8	.9	2.2	1.3	24
.Heat transfer										
a) Convection	50	.6	.5	2.1	.9	1.1	.7	2.6	1.0	18

TABLE 12.19 (Cont'd)

COLLEGE OF APPLIED ARTS & TECHNOLOGY PHYSICS YEAR 1

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
TEMPERATURE AND HEAT										
.Heat transfer (Cont'd)										
b) Conduction	61	.6	.5	2.4	.8	1.1	.8	2.8	.9	24
c) Radiation	53	.6	.5	2.2	.9	1.1	.8	2.7	1.0	24
.Thermodynamics										
a) First Law	37	.4	.5	1.9	.9	.8	.8	2.4	1.0	16
b) Second Law	29	.4	.5	1.8	1.1	.6	.7	2.1	1.2	11
c) The Carnot cycle	18	.1	.3	.9	1.0	.4	.7	1.4	1.4	8
PROPERTIES OF SOLIDS OTHER THAN THERMAL										
.Crystallographic properties of simple solids	18	.1	.3	1.0	.8	.2	.4	1.3	1.1	3
.Elastic properties, Hooke's law; moduli and compliances	29	.2	.4	1.8	1.1	.6	.8	2.3	1.3	16
.Electronic properties; band structure; conductors; semi-conductors and insulators	11	.1	.3	.8	1.1	.3	.7	1.0	1.4	3
.Electronic properties, the diode	5	.0	.0	.4	.8	.0	.0	.5	.8	0
.Electronic properties, the transistor	3	.0	.0	.2	.4	.0	.0	.5	.8	0
FLUIDS AT REST AND IN MOTION										
.Density and specific gravity	39	.6	.5	2.3	.7	1.2	.6	2.5	.8	18
.Atmospheric pressure - the barometer	37	.6	.5	2.2	.7	1.2	.6	2.5	.8	18
.Hydrostatic pressure - Pascal's law	39	.3	.5	2.3	.7	1.2	.7	2.5	.8	26
.Archimedes' principle - buoyancy	34	.7	.5	2.3	.9	1.2	.9	2.6	1.0	11
.Surface tension and capillary action	29	.2	.4	1.4	1.1	.7	.8	1.8	1.2	16
.Fluid flow, continuity conditions	29	.1	.3	1.9	1.0	.5	.7	2.2	1.3	11
.Streamline flow	18	.1	.3	1.3	1.3	.4	.7	1.9	1.5	8
.Bernoulli's Principle	26	.3	.5	2.0	1.1	.6	.7	2.2	1.3	8
.Turbulent flow	18	.1	.3	.9	1.0	.4	.7	1.4	1.4	8
.Viscosity	21	.0	.0	1.0	.9	.3	.5	1.4	1.1	8
.Poiseuille's Law	11	.0	.0	.6	1.0	.2	.4	1.0	1.0	5
SPECIAL THEORY OF RELATIVITY	11	.0	.0	.9	.7	.3	.5	1.3	1.4	5
PROPERTIES OF ELEMENTARY PARTICLES (other than proton, neutron or electron)	5	.0	.0	.5	.6	.5	.6	1.5	1.7	5
OTHER TOPICS (please list and respond appropriately)										

OTHER TOPICS (please list and respond appropriately)

TABLE 12.20
COLLEGE OF APPLIED ARTS AND TECHNOLOGY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT YOU EXPECT YOUR STUDENTS TO
HAVE THE FOLLOWING MATHEMATICAL SKILLS"

	NOT EXPECTED ¹		EXPECTED NOT COMPETENT ¹		EXPECTED ¹ COMPETENT ¹		TOTAL
	N	%	N	%	N	%	
Ability to use concepts of ratio and proportion	2	5	25	68	10	27	37
Use of logarithms	12	31	25	66	1	3	38
Use of exponential functions	19	50	19	50	-	-	38
Ability to convert degrees to radians	19	51	11	30	7	19	37
Use of trigonometric functions	6	16	22	60	9	24	37
Use of trigonometric identities	22	58	14	37	2	5	38
Manipulation of linear equations	3	8	25	70	8	22	36
Ability to solve simultaneous linear equations	9	24	25	68	3	8	37
Ability to find the roots of a quadratic equation	13	35	17	46	7	19	37
Ability to differentiate simple functions	36	95	2	5	-	-	38
Ability to integrate simple functions	37	97	1	3	-	-	38
Ability to manipulate vectors	26	68	11	29	1	3	38
Facility with vector algebra	32	84	6	16	-	-	38
Ability to apply the binomial expansion	35	92	3	8	-	-	38

¹ RESPONSE KEY: 0 - Students are not expected to have this skill
1 - Students are expected to have this skill
but most are not competent
2 - Students are expected to have this skill,
and most are competent

TABLE 13.1
UNIVERSITY PHYSICS YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS														TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	
University teaching	0	0	0	1	0	0	1	0	1	1	3	4	4	3	18
Teaching this course (or its equivalent)	0	2	4	1	2	2	2	0	0	1	1	1	1	1	18

TABLE 13.2
UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	15	83
Elementary	0	0
Secondary	1	6
Community college	2	11
Other	0	0
More than one other	0	0
Total	18	100

TABLE 13.3
UNIVERSITY PHYSICS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1	
	N	%
Doctorate	16	89
Master's	2	11
Honour Bachelor's (4 year)	0	0
Bachelor's	0	0
Post-Secondary Diploma	0	0
Other	0	0
Total	18	100

TABLE 13.4
UNIVERSITY PHYSICS
UNIVERSITY CATEGORY

	YEAR 1	
	N	%
Professor	6	33
Associate Professor	10	55
Assistant Professor	1	6
Lecturer/Instructor	1	6
Other	0	0
Total	18	100

TABLE 13.5
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Interests of students	3	17	6	33	7	39	2	11	-	-	18
Knowledge of subject of incoming students	6	33	9	50	2	11	1	6	-	-	18
Relationship between this course and others taken concurrently	1	6	12	66	4	22	1	6	-	-	18
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	5	29	6	35	3	18	2	12	1	6	17
Ontario Ministry of Education guidelines	-	-	-	-	1	6	12	66	5	28	18
Course outline assigned to you	2	11	9	50	-	-	5	28	2	11	18
Special interests or training you might have	4	22	3	17	7	39	4	22	-	-	18
Content and approach of principal text(s)	5	28	7	39	2	11	4	22	-	-	18
Staffing	2	12	1	6	-	-	7	44	6	38	16
Other	5	42	-	-	-	-	3	25	4	33	12

TABLE 13.6

UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 1	
	N	%
Yes	16	89
No	2	11
Total	18	100

TABLE 13.7

UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF
INCOMING STUDENTS?"

	YEAR 1	
	N	%
Excellent	-	-
Good	1	7
Fair	12	86
Poor	1	7
Total	14	100

TABLE 13.8

UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION
IN COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
A great deal	16	89
A moderate amount	2	11
Very little	-	-
Do not know	-	-
Total	18	100

TABLE 13.9

UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

Great extent	-	-
Moderate extent	-	-
Small extent	2	12
Not at all	15	88
Total	17	100

UNIVERSITY PHYSICS YEAR 1

[illegible]

TABLE 13.11

UNIVERSITY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Main text	14	78	4	22	-	-	-	-	-	-	18
Main text plus supplementary text(s)	-	-	6	33	5	28	3	17	4	22	18
Two or more main texts or materials from other texts	-	-	1	6	4	25	7	44	4	25	16
Laboratory equipment	12	66	3	17	1	6	1	6	1	6	18
Mimeographed materials (lecture notes, etc.)	1	6	2	11	6	33	8	44	1	6	18
Reference books, dictionaries, encyclopedias, journals, etc.	-	-	1	6	7	39	10	55	-	-	18
Individualized learning packages	-	-	-	-	2	11	14	78	2	11	18
Audiovisual media (television, tapes, film strips, etc.)	-	-	1	6	9	50	6	33	2	11	18
Other	5	28	1	6	-	-	12	66	-	-	18

TABLE 13.12

UNIVERSITY PHYSICS
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"HOW MUCH TIME IS NORMALLY SPENT ON
REVIEW OF MATERIAL TAKEN PRIOR TO THIS COURSE?"

	YEAR 1	
	N	%
0%	3	16
1-10%	10	55
11-20%	2	11
21-30%	1	6
31-40%	1	6
41-50%	-	-
51-75%	-	-
76%+	1	6
Total	18	100

TABLE 13.13

UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1	
	N	%
0%*	-	-
1-25%	-	-
26-50%	3	17
51-75%	6	33
76-100%	-	-
101-150%	4	22
151-200%	4	22
201%+	1	6
Total	18	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 13.14

UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 1	
	N	%
Yes	-	-
No	18	100
Not applicable	-	-
Total	18	100

TABLE 13.15

UNIVERSITY PHYSICS YEAR 1
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Final Examination*	-	-	-	-	-	-	6	33	5	28	4	22	3	17	-	-	18
Mid-term examination	6	33	3	17	5	28	4	22	-	-	-	-	-	-	-	-	18
Other written tests	9	50	1	6	2	11	5	28	-	-	-	-	1	6	-	-	18
Other oral tests	18	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
Problems, exercises	4	22	9	50	5	28	-	-	-	-	-	-	-	-	-	-	18
Laboratory reports and/or notebooks	5	29	2	12	4	24	6	35	-	-	-	-	-	-	-	-	17
Laboratory and/or other class participation	10	55	4	22	1	6	3	17	-	-	-	-	-	-	-	-	18
Individual papers (essays, reports, etc.)	18	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
Group or team papers, projects	18	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
Individual projects (exclusive of essays, reports)	18	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
Effort	18	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Attendance	18	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	15	83	2	11	1	6	-	-	-	-	-	-	-	-	-	-	18

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 13.16
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal			Moderate			Very Little			No			TOTAL
	N	%	Emphasis	N	%	Emphasis	N	%	Emphasis	N	%	Emphasis	
The student should acquire an attitude of scientific curiosity	6	33	8	45	4	22	-	-	-	-	-	-	18
The student should be able to think rationally and in particular be able to:													
.organize data presented in a problem	16	89	-	-	2	11	-	-	-	-	-	-	18
.and arrive at a solution													
.evaluate in empirical terms reports of observed phenomena	6	33	5	28	7	39	-	-	-	-	-	-	18
The student should understand the scientific method	9	50	7	39	1	6	1	6	1	6	1	6	18
The student should be able to apply the scientific method to the study of the behaviour of matter under the influence of the forces of nature and to the study of the properties of those forces including:													
.the ability to design and set up an experiment	1	6	6	33	8	44	3	17	3	17	3	17	18
.the ability to collect experimental data	9	50	5	28	3	16	1	6	1	6	1	6	18
.the ability to organize and analyze experimental data	9	50	4	22	4	22	1	6	1	6	1	6	18
.the ability to interpret the results of experiments in terms of mathematics and/or physical models	8	44	8	44	2	11	-	-	-	-	-	-	18
.the ability to communicate the results of experiments concisely, critically and profitably with knowledge and understanding	7	39	7	39	3	16	1	6	1	6	1	6	18

TABLE 13.16 (Cont'd)

UNIVERSITY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little		No		TOTAL
	N	%	N	%	N	%	N	%	
The student should recognize technological and engineering activities as applications of the principles of physics and aim to understand these activities in such terms	4	22	7	39	7	39	-	-	18
The student should be aware of the historical development of ideas and concepts in physics and the evolving nature of its theories	1	6	7	39	9	50	1	6	18

TABLE 13.17
UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Measurement	1	6	13	72	4	22	-	-	-	-	-	-	-	-	18	3.5	2.3
Functions	5	27	12	67	1	6	-	-	-	-	-	-	-	-	18	2.1	1.9
Motion (Kinematics)	-	-	10	55	7	39	1	6	-	-	-	-	-	-	18	5.8	2.9
Newton's Laws of Motion - Dynamics of a Particle	6	33	2	11	9	50	1	6	-	-	-	-	-	-	18	6.2	2.7
Statics	4	22	12	67	2	11	-	-	-	-	-	-	-	-	18	2.8	2.3
Newton's Laws of Motion - Dynamics of a Rigid Body	1	6	10	56	5	27	2	11	-	-	-	-	-	-	18	5.2	4.0
Gravity - Near the Earth's Surface	2	11	15	83	1	6	-	-	-	-	-	-	-	-	18	2.6	1.7
Universal Gravitation	3	17	14	78	1	5	-	-	-	-	-	-	-	-	18	2.1	2.0
Momentum	1	5	9	50	7	39	1	6	-	-	-	-	-	-	18	5.0	3.1
Work, Energy and Power	-	-	7	39	8	44	-	-	3	17	-	-	-	-	18	7.8	4.7
Vibrations and Waves	2	11	5	28	8	44	3	17	-	-	-	-	-	-	18	5.8	3.8
How Light Behaves	5	28	7	39	5	28	1	5	-	-	-	-	-	-	18	4.2	4.4
Interference and Diffraction	3	17	8	44	5	28	2	11	-	-	-	-	-	-	18	4.3	3.8
Electricity and Magnetism	3	16	2	11	1	6	5	28	4	22	1	6	2	11	18	13.2	12.5
Atomic Structure	4	22	6	33	5	28	2	11	-	-	-	-	1	6	18	5.9	7.6
Nuclear Physics	8	44	4	22	2	11	2	11	-	-	1	6	1	6	18	4.5	7.1
Temperature and Heat	5	28	2	11	3	17	2	11	4	22	2	11	-	-	18	9.2	8.2
Properties of Solids other than Thermal	13	72	5	28	-	-	-	-	-	-	-	-	-	-	18	.4	.8
Fluids at Rest and in Motion	11	61	6	33	1	6	-	-	-	-	-	-	-	-	18	1.3	1.9
Special Theory of Relativity	12	66	4	22	1	6	-	-	1	6	-	-	-	-	18	1.9	4.1

TABLE 13.17 (Cont'd)

UNIVERSITY PHYSICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Properties of Elementary Particles	16	89	2	11	-	-	-	-	-	-	-	-	-	-	18	.2	.4
Other Topics	14	77	2	11	1	6	-	-	-	-	-	-	1	6	18	2.5	7.4

TABLE 13.18
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
MEASUREMENT										
.Mass, length and time (fundamental quantities)	82	1.2	.7	2.3	.8	1.7	.7	2.7	1.0	35
.Errors	70	.5	.5	2.0	.8	1.3	.6	2.6	.7	58
.Accuracy and precision (significant figures,"rounding off")	76	.9	.8	2.2	.6	1.7	.5	2.5	.7	52
.SI	47	1.1	.8	2.1	1.0	1.8	1.0	2.2	1.1	35
.Development of relations relating physical quantities by dimensional analysis	64	.2	.4	1.5	1.2	1.1	1.1	2.2	1.1	47
.Dimensional consistency of equations relating physical quantities	82	.5	.5	1.9	.9	1.5	1.1	2.6	.8	64
FUNCTIONS										
Given a table of experimental data:										
.Plotting and properly labelling a graph of the data	52	1.2	.7	2.3	.6	2.0	.7	2.5	.8	47
.Writing the equation of a linear relation	52	1.4	.6	2.4	.6	2.1	.6	2.6	.8	47
.Replotting a non-linear relation to obtain a straight line and writing the relation	70	.3	.5	2.0	.9	1.7	1.0	2.6	.9	64
.Plotting a power law relation on log-log paper and writing the relation	47	2.0	.4	1.5	1.2	1.2	1.3	2.1	1.2	35
.Plotting an exponential relation on semi-log paper and writing the relation	58	.2	.4	1.7	1.1	1.4	1.2	2.0	.6	47
MOTION (Kinematics)										
.Motion with constant acceleration in one, two, or three dimensions	76	1.5	.8	3.0	.8	2.9	.4	3.3	.9	41
.Straight line kinematics with uniform acceleration	88	1.6	.8	3.0	.7	2.4	.7	3.2	.9	47
.Straight line kinematics with non-uniform acceleration	64	.6	.7	2.4	1.3	1.1	.9	2.9	1.5	47
.Two-dimensional kinematics with uniform acceleration (e.g., projectile motion)	82	1.2	.8	2.8	.9	2.2	.8	3.1	.9	58
.Two-dimensional kinematics with non-uniform acceleration (e.g., circular motion)	82	.8	.8	2.4	1.2	1.8	1.1	2.9	1.4	52
.Three-dimensional kinematics with uniform acceleration	47	.4	.6	1.4	1.5	.8	1.0	.5	1.2	52
.Three-dimensional kinematics with non-uniform acceleration	41	.5	.2	1.1	1.5	.5	1.0	1.2	1.7	17

^aThe means in this table are based on a response key which ranges from 0-indicating No Knowledge to 4-Advanced. See physics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 13.18 (Cont'd)
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
NEWTON'S LAWS OF MOTION - DYNAMICS OF A PARTICLE										
.Newton's first law, mass and inertia	94	1.0	.6	3.0	.7	2.1	.7	3.2	.8	64
.Newton's second law	94	1.4	.7	3.0	.7	2.1	.7	3.3	.8	47
.Newton's third law	76	1.1	.6	2.8	.7	2.2	.7	3.2	.8	70
.Resolution and summation of forces by scale drawing	82	1.2	.7	2.5	.8	2.4	1.2	2.8	1.1	58
.Resolution and summation of forces by analytical methods	94	1.0	.8	2.8	.7	2.1	.8	2.9	1.0	70
.Frames of reference	76	.3	.5	2.1	1.2	1.4	.9	2.7	1.2	58
.Pseudo forces	35	.2	.4	1.1	1.4	.8	1.0	1.6	1.5	29
.Dynamics of circular motion	76	.5	.5	2.5	.8	1.4	1.0	3.0	1.3	47
STATICS										
.Moments	70	.9	.8	2.4	1.1	1.8	.8	2.8	1.0	29
.Laws of equilibrium	76	1.0	.6	2.5	1.0	1.9	.9	2.8	.8	47
.Simple machines, the lever, the incline plane, pulleys	58	.8	.7	1.6	1.2	1.9	.8	2.7	.9	41
NEWTON'S LAWS OF MOTION - DYNAMICS OF A RIGID BODY										
.Translational motion	64	1.2	.9	2.3	1.4	2.0	1.0	3.0	1.0	47
.Rotational motion, torque, moment of inertia, angular acceleration	70	.7	.5	2.2	1.2	1.4	.9	3.0	1.2	58
.Combined translational and rotational motion	70	.1	.2	1.5	1.3	.8	.7	2.5	1.3	47
.Friction	88	.6	.7	2.4	1.0	1.4	.8	3.0	.9	47
GRAVITY -NEAR THE EARTH'S SURFACE										
.Distinction between gravitational and inertial mass; principle of equivalence	88	.1	.4	1.9	1.1	.9	.8	2.3	1.1	35
.Weight and acceleration due to gravity	82	1.1	.6	2.9	1.1	1.9	.9	3.0	.8	41
.The dynamics of projectile motion (no air resistance)	64	1.0	.9	2.7	1.0	1.9	1.0	3.2	.9	41
.The dynamics of projectile motion (air resistance)	35	.3	.5	1.3	1.5	.7	.8	1.8	1.8	29
.Dependence of g on distance from centre of earth or on latitude	70	.2	.4	2.0	1.1	1.1	.9	2.8	1.3	41

TABLE 13.18 (Cont'd)

UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
UNIVERSAL GRAVITATION										
.Ptolemy, Copernicus, Kepler	52	.2	.6	1.2	1.1	1.0	1.2	1.4	1.4	29
.Kepler's Laws	58	.5	.9	1.7	1.3	.7	.8	2.0	1.7	23
.Universal law of gravitation	82	.7	.8	2.4	1.1	1.7	1.2	2.8	1.3	52
.Circular orbits	82	.3	.5	2.3	.9	1.6	1.2	2.8	1.0	52
.General motion under a central force	41	.1	.3	1.2	1.4	.6	.7	1.7	1.7	23
MOMENTUM										
.Impulse and momentum	82	.8	.7	2.8	.7	1.8	.6	3.3	.9	58
.Conservation of linear momentum	82	.8	.7	2.9	.7	1.9	.9	3.1	.9	58
.Elastic collisions (in one dimension)	82	.6	.6	2.8	.8	1.8	1.2	3.2	.8	47
.Inelastic collisions (in one dimension)	82	.6	.6	2.4	1.0	1.7	1.2	3.0	1.2	41
.Collisions of bodies in two dimensions	82	.3	.4	2.2	.9	1.3	1.0	3.0	.7	35
.Angular momentum	76	.1	.3	2.1	1.2	1.2	1.1	2.7	1.3	35
.Conservation of angular momentum	70	.1	.3	2.0	1.2	1.2	1.1	2.7	1.3	35
.Precession	23	.0	.0	.6	1.2	.7	1.1	1.5	1.9	17
WORK, ENERGY AND POWER										
.Work done by a constant force	52	1.3	.8	3.0	7.0	2.2	.9	3.2	.8	35
.Work done by a non-constant force (e.g., $F=kx$)	82	.3	.6	2.5	1.1	1.6	1.2	3.2	1.1	64
.Work done by a non-constant force (e.g., $F=k_1x^2$)	76	.1	.4	2.3	1.2	1.5	1.3	2.3	1.5	47
.Work performed by compressing a gas	58	.1	.4	1.6	1.4	.9	.9	2.3	1.6	35
.Kinetic energy and its relation to the work	82	.8	.5	2.9	.7	1.8	.6	3.2	.8	64
.Potential energy (constant force [e.g., mgh])	58	1.2	.8	2.7	1.0	1.9	1.0	3.2	.8	35
.Potential energy (non-constant force [e.g., kx^2 or $\frac{Gm_1m_2}{r}$])	94	.3	.6	2.8	.8	1.1	.9	3.3	.8	47
.Conservation of mechanical energy (transformations between kinetic and potential energy)	94	.9	.6	2.8	.7	1.9	.7	3.2	.8	52
.Power	88	.5	.6	2.6	.5	1.5	.8	3.2	.8	47
.Efficiency of work	52	1.2	1.0	1.8	1.1	1.4	.8	2.4	1.2	35

TABLE 13.18 (Cont'd)

UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
VIBRATIONS AND WAVES										
.Vibrations	58	.8	.7	2.2	1.3	1.5	1.2	2.4	1.2	29
.Kinematic description of SHM, ($y= A \sin \omega t$ or reference circle)	76	.3	.5	2.4	1.1	1.4	.9	2.9	1.1	58
.Motion under a harmonic force ($F= -kx$)	76	.3	.5	2.6	1.2	1.4	.8	2.9	1.2	58
.Solutions of the equation of motion for an oscillating system (Newton's second law)	64	.0	.0	2.0	1.4	.7	.9	2.5	1.5	35
.Mass on a spring	76	.5	.5	2.5	1.2	1.5	1.2	2.9	1.2	47
.Simple pendulum (in small angle approximation)	76	.8	.8	2.5	1.2	1.5	1.1	2.9	1.1	29
.Rigid pendulum (in small angle approximation)	52	.3	.6	1.5	1.3	.5	.8	2.0	1.6	23
.Torsional oscillations	47	.3	.6	1.7	1.4	.5	.7	2.2	1.6	17
.Conservation of energy in undamped oscillations	70	.1	.4	2.3	1.2	.9	.6	2.7	1.3	35
.Exponential decay of oscillations	41	.0	.0	1.1	1.4	.1	.4	2.2	1.8	17
.Derivation of the differential wave equation for compressional waves in a gas or transverse waves on a string	5	.1	.3	1.2	1.5	.5	.7	1.7	1.7	17
.Relation between frequency, wavelength and velocity ($v = f\lambda$)	70	1.1	.8	2.5	1.0	1.6	.7	2.7	1.1	29
.Waves propagated in one dimension	76	.7	.6	2.3	1.1	1.3	.9	2.7	1.2	35
.Waves propagated in two dimensions	52	.6	1.1	1.6	1.3	.7	.8	1.9	1.4	17
.Polarization	47	.4	.5	1.5	1.0	.7	.8	1.7	1.4	11
.Doppler effect	47	.6	1.1	1.6	1.3	.7	1.0	1.8	1.5	23
.Shock waves	23	.2	.4	.6	1.0	.5	.8	1.0	1.3	5
.Energy carried by a wave in one dimension	41	.2	.4	2.1	1.3	.6	.5	2.1	1.3	29
.Relative and absolute intensity of sound waves (decibels)	23	.2	.4	.8	.9	.8	.8	1.3	1.1	11
.Energy radiated by a point source (inverse square law)	64	.6	1.1	1.9	1.0	1.1	.7	2.5	1.2	41
HOW LIGHT BEHAVES										
.Qualitative discussion of light sources	29	.7	.5	1.2	.6	1.0	.5	1.3	.7	11
.Rectilinear propagation of light waves	41	.5	.5	1.4	.9	1.0	.8	1.5	.9	17
.Concept of a wave front	58	.5	.7	1.6	1.2	1.4	1.2	1.9	1.2	35
.Huygens' principle	41	.3	.6	1.6	1.3	1.3	1.3	2.0	1.2	29
.Reflection of waves at a plane boundary	52	.5	.7	1.9	1.2	1.1	.9	2.2	1.1	11
.Reflection of waves at a spherical boundary	29	.2	.4	1.2	1.2	.8	.9	1.5	1.2	5

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TABLE 13.18 (Cont'd)
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	EXIT	
HOW LIGHT BEHAVES (Cont'd)										
.Convex and concave mirrors										
a) scale drawings	23	.4	.7	1.5	1.2	1.4	.8	1.9	.7	11
b) analytical treatment	29	.4	.7	1.8	1.5	1.4	.8	2.0	.8	11
.Refraction of waves at a plane interface between two media	47	.9	.8	2.0	1.0	1.3	.7	2.3	.5	0
.Concept of refractive index (Snell's law)	17	1.2	.9	1.7	1.2	1.5	.8	1.9	.6	0
.Total internal reflection	35	.5	.7	1.7	1.3	1.1	.8	2.0	1.1	5
.Refraction by a prism	23	1.0	1.2	2.1	1.2	1.4	1.1	2.4	.5	5
.Prism spectrometer - minimum deviation	41	.3	.5	1.5	1.1	1.1	.9	2.4	.5	11
.Dispersive power of a medium	41	.2	.4	1.3	1.0	.8	.9	1.9	.8	5
.Refraction at a spherical interface	35	.2	.4	1.4	1.2	1.0	.9	1.9	1.4	17
.The lensmaker's equation	41	.4	.7	1.7	1.3	1.1	.8	2.4	1.2	11
.The thin lens equation	41	.7	.8	2.2	1.4	1.6	.5	2.6	.9	11
.Formation of images by lenses										
a) scale drawings	29	.8	.9	2.0	1.1	1.6	.5	2.1	.6	11
b) analytical treatment	35	.6	.8	2.0	1.5	1.6	.5	2.6	.9	17
.Power of a lens	41	.4	.5	1.6	1.2	1.0	.9	1.9	.8	11
.Chromatic aberration	17	.2	.4	.7	.7	.6	.7	.9	.7	0
.Monochromatic aberrations	11	.2	.4	.6	.7	.6	.7	1.0	1.0	0
.The eye and the camera	41	.4	.5	1.4	.9	1.3	.7	2.0	.9	23
.Eye defects and corrective lenses	41	.4	.5	1.5	1.1	1.3	.7	2.1	1.0	23
.Simple and compound microscopes	41	.1	.3	1.6	1.3	1.0	.8	2.0	.9	23
.The telescope	41	.1	.3	1.6	1.3	1.0	.8	2.0	.9	23
INTERFERENCE AND DIFFRACTION										
.Superposition of pulses and/or waves	76	.3	.6	1.9	1.2	1.0	.3	2.5	1.3	41
.Reflection and transmission of pulses and waves at a boundary	58	.6	.9	1.7	1.3	1.2	.9	2.3	1.4	29
.Standing waves on a string, ends fixed	52	.4	.5	1.8	1.5	1.3	.9	2.4	1.2	35
.Standing waves in a pipe, both ends open	41	.3	.5	1.4	1.3	1.1	.9	2.0	1.3	29
.Standing waves in a pipe, one end open, one end closed	41	.3	.5	1.4	1.3	1.1	.9	2.0	1.3	29

TABLE 13.18 (Cont'd)

UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS		
		ENTRY	S.D.	EXIT	ENTRY	S.D.	EXIT			
INTERFERENCE AND DIFFRACTION (Cont'd)										
.Interference of periodic waves, two point sources in a two-dimensional medium	58	.6	.9	2.1	1.3	1.4	.9	2.3	1.4	35
.Interference effects produced by a double slit (Young's double slit)	58	.6	.6	2.3	1.4	1.4	.8	2.5	1.5	29
.Interference effects produced by a multiple slit	52	.2	.4	1.5	1.1	.8	1.0	1.9	1.5	23
.Fraunhofer diffraction by a straight edge	29	.0	.0	1.0	1.1	.6	.8	1.5	1.4	17
.Fraunhofer diffraction by a single slit (single slit interference)	41	.1	.3	1.5	1.2	.6	.8	1.7	1.5	11
.Fraunhofer diffraction by a circular aperture	29	.0	.0	1.0	1.1	.6	.9	1.1	1.4	11
.Fraunhofer diffraction by a grating	35	.0	.0	1.4	1.3	.6	.9	1.3	1.6	47
.Rayleigh resolution criterion	29	.0	.0	.9	1.1	.6	.7	1.7	1.2	23
.Resolving power of a grating	11	.0	.0	.6	1.2	.4	.7	1.1	1.6	11
.Grating spectrometer	23	.0	.0	.9	1.1	.5	.9	1.0	1.4	5
.Fresnel diffraction	11	.0	.0	.7	1.1	.6	1.0	1.0	1.4	5
.Interference effects in parallel thin films	23	.2	.4	1.0	1.2	.9	.8	1.4	1.3	17
.Michelson interferometer	11	.1	.3	1.0	1.6	.7	1.0	1.4	1.8	5
.Interference effects in wedge-shaped thin films	17	.1	.3	.8	1.3	.8	.9	1.3	1.4	11
ELECTRICITY AND MAGNETISM										
.Electrostatics	70	.9	.5	2.6	.9	1.6	.7	2.8	1.1	29
.Electric force (Coulomb's law)	76	.9	.5	2.9	.8	1.8	.6	3.2	.9	41
.Electric field	70	.3	.5	2.7	.7	1.7	.8	3.2	.9	52
.Electric potential energy	64	.2	.4	2.6	.8	1.2	.7	3.2	.9	47
.Electric potential difference - volt	76	.6	.6	2.6	.8	1.6	.9	2.9	.8	41
.Sources of emf	64	.8	.6	2.1	.9	1.4	.7	2.3	1.2	35
.Millikan experiment	47	.5	.7	1.6	.9	1.1	.8	1.9	1.3	29
.Motion of a charge - ampere	76	.5	.5	2.3	.7	1.5	.8	2.5	.9	47
.Ohm's Law - constant resistance	70	.9	.8	2.5	.8	1.5	.8	2.6	.9	29
.Resistance of a conductor	70	.9	.8	2.5	.8	1.5	.8	2.6	.9	29
.D.C. electric circuits	70	.8	.8	2.5	.9	1.5	.7	2.8	1.0	35
.Kirchhoff's Laws	64	.2	.6	2.3	1.2	1.0	.9	2.8	1.0	35
Capacitance	58	.0	.0	2.3	1.2	1.1	.9	2.5	1.1	35

TABLE 13.18 (Cont'd)
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		ENTRY	EXIT		ENTRY	EXIT				
			MEAN	S.D.		MEAN	S.D.			
ELECTRICITY AND MAGNETISM (Cont'd)										
.Properties of dielectrics	35	.0	.0	1.9	1.1	.6	.8	2.0	1.4	23
.Transients (RC circuits)	29	.0	.0	.6	1.0	.3	.7	1.4	1.7	5
.Electric power in DC circuits	70	.4	.5	2.5	.9	1.3	.8	2.7	1.0	35
.Magnetism	47	.6	.5	1.8	1.1	1.0	.8	2.2	1.3	11
.Magnetic field	58	.4	.5	2.0	1.1	1.1	.7	2.3	1.4	29
.Force on moving charge in a magnetic field	58	.2	.4	2.2	1.1	1.3	.8	2.3	1.3	41
.Ratio of charge to mass of the electron	47	.3	.5	1.5	1.0	1.0	.8	1.9	1.4	23
.Magnetic field produced by a moving charge	47	.2	.4	1.9	1.2	1.0	.7	2.3	1.6	23
.Force on a current carrying conductor in a uniform magnetic field	47	.2	.4	2.0	1.2	1.1	.7	2.2	1.5	29
.Electric meters - galvanometers	41	.4	.5	1.8	1.3	1.0	.8	1.7	1.3	11
.Electric motors	35	.4	.5	1.4	1.1	.8	.8	1.3	1.2	5
.Emf in a conductor moving in a uniform magnetic field	41	.2	.4	1.7	1.1	.9	.8	2.0	1.4	17
.Lenz' law	17	.1	.3	1.2	1.5	.6	.8	1.3	1.4	5
.Inductance	23	.1	.3	.9	1.2	.6	.8	1.4	1.6	5
.AC generator	23	.1	.3	1.0	1.1	.6	.8	1.3	1.4	5
.DC generator	23	.1	.3	.7	1.1	.4	.5	1.3	1.4	5
.AC circuits	11	.1	.3	.9	1.1	.4	.5	1.3	1.4	5
.Transformers	23	.1	.3	.9	1.1	.4	.5	1.3	1.4	5
.Hysteresis	11	.0	.0	.4	.9	.4	.5	1.0	1.3	11
.Electromagnetic spectrum	11	.5	.5	1.8	1.0	.8	.4	1.7	1.1	5
ATOMIC STRUCTURE										
.Thomson model of atom	41	.2	.4	1.4	.9	.7	.7	1.4	1.3	23
.Rutherford scattering experiment	35	.2	.4	1.1	.9	.6	.5	1.4	1.2	11
."Solar system" model of atom (Rutherford model)	41	.6	.7	1.3	.8	.9	.8	1.6	1.2	17
.Properties of electron	52	.6	.5	1.5	.8	.8	.6	1.9	1.0	5
.Photoelectric effect (Photons)	29	.4	.5	1.4	1.0	.6	.5	1.6	1.2	5
.Compton effect	47	.4	.5	1.6	1.2	.3	.5	1.3	1.1	11
.Particle - wave duality of radiation	58	.4	.5	1.8	1.0	.7	.7	1.9	1.2	11
.Particle - wave duality of matter (de Broglie)	47	.4	.5	1.6	1.2	1.2	.4	1.7	1.4	11

TABLE 13.13 (Cont'd)
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
ATOMIC STRUCTURE (Cont'd)										
.Line spectra (historical evidence, Balmer series, etc.)	47	.3	.5	1.5	.9	.8	.6	1.7	1.3	23
.Discrete energy levels (Franck - Hertz experiment)	35	.4	.5	1.3	1.1	.8	.7	1.6	1.5	11
.Energy levels of hydrogen (Bohr model)	52	.4	.5	1.6	1.0	1.0	.2	1.8	1.2	17
NUCLEAR PHYSICS										
.Radioactive decay	41	.4	.5	1.4	1.1	.8	.8	2.0	.7	11
.Alpha, beta and gamma radiation; properties and spectra	29	.3	.5	.9	.9	.6	.7	1.1	1.3	5
.Detection of radiation	35	.4	.5	1.1	.9	.6	.7	1.3	1.2	5
.Structure of the nucleus	35	.3	.5	.9	.9	.7	.5	1.4	1.2	17
.Properties of nucleons	35	.2	.4	1.0	.9	.5	.5	1.1	1.1	11
.Nuclear reactions - general nature	35	.0	.0	1.0	.9	.3	.5	1.0	1.1	11
.Nuclear fission	35	.4	.5	1.3	1.0	.6	.5	1.4	1.2	5
.Nuclear fusion	35	.4	.5	1.3	1.0	.6	.5	1.4	1.2	5
.Radiation hazards	17	.4	.5	.9	.9	.8	.7	1.3	1.3	5
TEMPERATURE AND HEAT										
.Temperature	64	1.0	.6	2.2	.6	1.5	1.0	2.3	.7	17
a) scales	64	1.0	.6	2.2	.6	1.6	1.0	2.4	.7	23
b) methods of measurement	58	.8	.6	2.2	.8	1.3	.5	2.5	.7	17
.Thermal expansion										
.Heat	64	.4	.6	2.2	1.0	1.2	.8	1.8	1.2	29
a) Kinetic theory	52	.2	.4	1.8	1.4	.9	.8	2.2	1.3	35
b) Maxwellian velocity distribution	76	.6	.5	2.5	.7	1.5	.5	2.9	.3	41
c) Conversion of mechanical to thermal energy	70	.7	.6	2.5	.7	1.5	.5	2.6	.8	29
d) Specific heat	58	.7	.5	2.4	.5	1.3	.5	2.3	.5	17
e) Calorimetry	58	1.1	.9	2.4	1.2	1.7	1.1	2.6	1.2	17
f) Gas laws	47	.8	.6	1.8	1.1	1.0	.5	1.9	1.0	5
g) Change of phase	29	.5	.5	1.1	1.0	.6	.5	1.4	1.0	5
h) Vapour pressure and humidity										
.Heat transfer										
a) Convection	41	.3	.5	1.2	.6	.7	.5	1.2	.8	11

TABLE 13.18 (Cont'd)
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
TEMPERATURE AND HEAT										
.Heat transfer (Cont'd)										
b) Conduction	58	.5	.5	2.1	1.1	1.2	.7	2.3	.9	29
c) Radiation	58	.4	.6	1.6	.9	1.1	.6	2.1	1.0	35
.Thermodynamics										
a) First Law	70	.2	.4	2.3	1.2	.9	.7	2.3	1.3	29
b) Second Law	47	.1	.3	1.7	1.5	.9	.8	2.2	1.3	35
c) The Carnot cycle	41	.0	.0	1.4	1.4	.6	.5	2.1	1.3	23
PROPERTIES OF SOLIDS OTHER THAN THERMAL										
.Crystallographic properties of simple solids	11	.0	.0	.4	.8	.2	.4	.7	.8	5
.Elastic properties, Hooke's law; moduli and compliances	11	.5	.8	1.3	1.5	1.0	1.5	1.8	1.8	5
.Electronic properties; band structure; conductors; semi-conductors and insulators	11	.0	.0	.4	.5	.3	.5	.7	.5	5
.Electronic properties, the diode	0	.1	.4	.1	.4	.2	.4	.3	.5	0
.Electronic properties, the transistor	0	.1	.4	.1	.4	.2	.4	.3	.5	0
FLUIDS AT REST AND IN MOTION										
.Density and specific gravity	23	1.1	.9	1.9	.8	1.7	.5	2.0	.0	11
.Atmospheric pressure - the barometer	29	.5	.7	1.6	.9	1.3	.5	1.9	.4	11
.Hydrostatic pressure - Pascal's law	41	.5	.5	1.6	1.0	1.4	.5	2.0	.0	35
.Archimedes' principle - buoyancy	29	1.1	.9	1.9	1.2	1.6	.5	2.4	.7	17
.Surface tension and capillary action	23	.3	.5	.9	1.0	.7	.8	1.0	1.1	5
.Fluid flow, continuity conditions	17	.0	.0	.9	1.2	.2	.4	.8	1.1	5
.Streamline flow	17	.0	.0	.6	1.1	.2	.4	.7	.8	5
.Bernoulli's Principle	11	.0	.0	.6	1.1	.3	.5	.6	.9	5
.Turbulent flow	5	.0	.0	.1	.4	.0	.0	.4	.5	0
.Viscosity	29	.2	.4	1.0	1.2	.5	.5	1.3	1.2	11
.Poiseuille's Law	11	.6	.7	.3	.5	.0	.0	.5	.5	0
SPECIAL THEORY OF RELATIVITY	29	.2	.4	1.8	1.7	.4	.5	2.2	1.8	11
PROPERTIES OF ELEMENTARY PARTICLES (other than proton, neutron or electron)	17	.0	.0	.6	.9	.3	.5	.9	1.2	11
OTHER TOPICS (please list and respond appropriately)	23	.2	.4	1.4	1.3	.0	.0	1.3	1.5	0

TABLE 13.19
UNIVERSITY PHYSICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT YOU EXPECT YOUR STUDENTS TO
HAVE THE FOLLOWING MATHEMATICAL SKILLS"

	NOT EXPECTED ¹		EXPECTED NOT COMPETENT ¹		EXPECTED COMPETENT ¹		TOTAL
	N	%	N	%	N	%	
Ability to use concepts of ratio and proportion	-	-	5	29	12	71	17
Use of logarithms	2	12	8	47	7	41	17
Use of exponential functions	6	35	10	59	1	6	17
Ability to convert degrees to radians	4	24	5	29	8	47	17
Use of trigonometric functions	-	-	11	65	6	35	17
Use of trigonometric identities	5	29	7	42	5	29	17
Manipulation of linear equations	-	-	13	76	4	24	17
Ability to solve simultaneous linear equations	2	12	13	76	2	12	17
Ability to find the roots of a quadratic equation	2	12	7	41	8	47	17
Ability to differentiate simple functions	7	41	7	41	3	18	17
Ability to integrate simple functions	10	59	6	35	1	6	17
Ability to manipulate vectors	4	24	12	70	1	6	17
Facility with vector algebra	8	47	9	53	-	-	17
Ability to apply the binomial expansion	10	59	6	35	1	6	17

- ¹ RESPONSE KEY: 0 - Students are not expected to have this skill
 1 - Students are expected to have this skill but most are not competent
 2 - Students are expected to have this skill, and most are competent

TABLE 14.1
SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS																TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+			
Enseignement au niveau secondaire	0	4	0	0	1	1	0	2	0	1	0	1	1	0	11		
Enseignement ce cours (ou son équivalent)	0	5	0	2	1	3	0	0	0	0	0	0	0	0	11		

TABLE 14.2
SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

L'AN 3 GENERAL				
			N	%
Non			5	45
Elémentaire			1	9
Collégial			2	18
Universitaire			1	9
Autre niveau			1	9
Plus d'un niveau			1	9
Total			11	100

TABLE 14.3
SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS																TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+			
Enseignement au niveau secondaire	0	2	0	1	3	2	1	0	0	0	0	2	1	0	12		
Enseignement ce cours (ou son équivalent)	0	2	1	2	5	1	0	0	0	1	0	0	0	0	12		

TABLE 14.4
SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 3 AVANCE	
	N	%
Non	6	50
Elémentaire	1	8
Collégial	1	8
Universitaire	3	25
Autre niveau	0	0
Plus d'un niveau	1	8
Total	12	100

TABLE 14.5

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS															
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	TOTAL	
Enseignement au niveau secondaire	0	0	0	2	2	2	0	3	1	1	0	1	0	0	12	
Enseignement ce cours (ou son équivalent)	0	1	1	1	2	3	1	2	0	0	0	1	0	0	12	

TABLE 14.6

SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 5	
	N	%
Non	8	67
Elémentaire	0	0
Collégial	3	25
Universitaire	0	0
Autre niveau	0	0
Plus d'un niveau	1	8
Total	12	100

TABLE 14.7

SECONDARY SCHOOL PHYSIQUE
DIPLOMES LES PLUS ELEVES DES PROFESSEURS

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Doctorat	-	-	1	8	-	-
Maîtrise	3	27	4	33	3	25
Baccalauréat spécialisé	5	46	4	33	6	50
Baccalauréat général	3	27	2	17	2	17
Certificat post-secondaire	-	-	-	-	-	-
Autre diplôme	-	-	1	8	1	8
Total	11	100	12	100	12	100

TABLE 14.8

SECONDARY SCHOOL PHYSIQUE
CATEGORIE DE L'OSSTF OU DE L'AEFO

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Catégorie 1/A1	4	36	2	17	-	-
Catégorie 2/A2	1	9	1	8	1	8
Catégorie 3/A3	-	-	1	8	1	8
Catégorie 4/A4	6	55	8	67	10	84
Total	11	100	12	100	12	100

TABLE 14.9

SECONDARY SCHOOL PHYSIQUE
LE POSTE DU PROFESSEUR DANS L'ECOLE

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Directeur	-	-	-	-	-	-
Directeur adjoint	-	-	-	-	-	-
Chef de département	3	27	1	8	4	33
Chef adjoint	1	9	1	8	3	25
Professeur	7	64	10	84	5	42
Autre poste	-	-	-	-	-	-
Total	11	100	12	100	12	100

TABLE 14.10

SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"CE COURS A-T-IL UN LIEN QUELCONQUE AVEC
VOTRE DOMAINE DE SPECIALISATION?"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui, il s'inscrit dans mon domaine de spécialisation	9	82	10	84	11	92
Oui, il s'y rattache indirectement	2	18	1	8	-	-
Non	-	-	1	8	1	8
Total	11	100	12	100	12	100

TABLE 14.11

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP		MODÉRE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Intérêt des étudiants	7	64	3	27	1	9	-	-	-	-	11
Connaissance du sujet par les étudiants	4	36	1	9	2	18	3	27	1	9	11
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	2	18	3	27	3	27	3	27	-	-	11
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	1	9	3	27	5	46	1	9	1	9	11
Programme-cadre du Ministère de l'éducation de l'Ontario	4	36	2	18	4	36	1	9	-	-	11
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	2	18	3	27	-	-	6	55	-	-	11
Votre propre intérêt pour la matière enseignée et/ou votre formation	9	81	1	9	1	9	-	-	-	-	11
Contenu et orientation du (des) manuel(s) de base	-	-	7	64	2	18	2	18	-	-	11
Corps enseignant	1	10	-	-	3	30	5	50	1	10	10
Autres facteurs	3	43	1	14	-	-	2	29	1	14	7

TABLE 14.12

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP			MODERE-			UN PEU			PAS DU			ITEM NON			TOTAL
	N	%		N	%		N	%		N	%		N	%		
Intérêt des étudiants	6	50	3	25	3	25	-	-	-	-	-	-	-	-	-	12
Connaissance du sujet par les étudiants	4	33	5	42	1	8	2	17	-	-	-	-	-	-	-	12
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	2	17	2	17	7	58	1	8	-	-	-	-	-	-	-	12
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	3	25	3	25	3	25	3	25	-	-	-	-	-	-	-	12
Programme-cadre du Ministère de l'éducation de l'Ontario	6	50	3	25	2	17	1	8	-	-	-	-	-	-	-	12
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	2	17	3	25	1	8	4	33	-	-	-	-	2	17	-	12
Votre propre intérêt pour la matière enseignée et/ou votre formation	7	58	2	17	3	25	0	0	-	-	-	-	-	-	-	12
Contenu et orientation du (des) manuel(s) de base	4	33	4	33	2	17	2	17	-	-	-	-	-	-	-	12
Corps enseignant	1	8	-	-	1	8	8	67	2	17	-	-	2	17	-	12

TABLE 14.13

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUÉZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCÉ DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP		MODÈRE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	TOUT	%	PERTINENT	%	
Intérêt des étudiants	8	67	2	17	1	8	1	8	-	-	12
Connaissance du sujet par les étudiants	6	50	4	33	2	17	-	-	-	-	12
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	3	25	4	33	3	25	2	17	-	-	12
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	6	50	3	25	3	25	-	-	-	-	12
Programme-cadre du Ministère de l'éducation de l'Ontario	5	42	4	33	1	8	2	17	-	-	12
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	1	8	-	-	2	17	7	58	2	17	12
Votre propre intérêt pour la matière enseignée et/ou votre formation	9	75	1	8	2	17	-	-	-	-	12
Contenu et orientation du (des) manuel(s) de base	2	16	5	42	5	42	-	-	-	-	12
Corps enseignant	-	-	-	-	-	-	8	67	4	33	12
Autres facteurs	1	10	1	10	-	-	6	60	2	20	10

TABLE 14.14

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SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"EXISTE-T-IL DES COURS PRE-REQUIS (RECOMMEDES AU NIVEAU SECONDAIRE)"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui	7	64	8	67	9	75
Non	4	36	4	33	3	25
Total	11	100	12	100	12	100

TABLE 14.15

SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"EST-CE-QUE LES ETUDIANTS ETAIENT BIEN PREPARE A SUIVRE VOTRE COURS?"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui, très bien	-	-	1	9	1	8
Oui, assez bien	3	33	4	33	5	42
Oui, bien	1	11	3	25	4	33
Non, pas suffisamment	5	56	4	33	2	17
Total	9	100	12	100	12	100

TABLE 14.16

SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"QUELLE EST L'IMPORTANCE DE L'ECART QUI DIFFERENCIE LES ETUDIANTS AU
DEBUT DE VOTRE COURS"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Ecart important	5	46	3	25	6	50
Ecart acceptable	4	36	8	67	5	42
Ecart négligeable	2	18	1	8	1	8
Impossible d'en juger	-	-	-	-	-	-
Total	11	100	12	100	12	100

TABLE 14.17

SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"A QUEL POINT EST-CE-QUE CE COURS PERMET AUX ETUDIANTS DE FAIRE DU
PROGRES A UN RYTHME INDIVIDUEL?"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Enormément	-	-	-	-	-	-
Passablement	-	-	-	-	-	-
Un peu	2	18	2	18	2	17
Pas du tout	9	82	9	82	10	83
Total	11	100	11	100	12	100

TABLE 14.18 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Présentations par des étudiants (sans compter les séminaires ou le tutorat)	7	64	4	36	-	-	-	-	-	-	-	-	-	-	-	-	11
Sessions d'évaluation	6	55	5	45	-	-	-	-	-	-	-	-	-	-	-	-	11
Audiovisuel (télévision, rubans magnétiques, films, radio, etc.)	3	27	8	73	-	-	-	-	-	-	-	-	-	-	-	-	11
Classes-promenades et visites par des personnes-ressources	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Autres techniques	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11

SECONDARY SCHOOL PHYSIQUE YEAR 5

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES

CETTE ANNEE DANS VOTRE COURS."

[illegible]

TABLE 14.21

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EN QUELLE MESURE VOS ETUDIANTS UTILISENT-ILS LES RESSOURCES
MENTIONNEES PLUS BAS DANS CE COURS?"

	UTILISATION SOUTENUE			UTILISATION MOYENNE			UTILISATION MINIMALE			AUCUNE UTILISATION			NE S'APPLIQUE PAS			TOTAL
	N	%		N	%		N	%		N	%		N	%		
Manuel de base	-	-		-	-		6	55		5	45		-	-		11
Manuel de base et d'autres manuels complémentaires	-	-		-	-		7	64		4	36		-	-		11
Deux manuels de base ou plus, ou des extraits d'autres manuels	-	-		2	18		2	18		7	64		-	-		11
Matériel de laboratoire	6	55		5	45		-	-		-	-		-	-		11
Notes de cours, etc. photocopiées	6	55		3	27		1	9		1	9		-	-		11
Livres de référence, dictionnaires, encyclopédies, journaux, etc.	1	9		-	-		5	46		5	46		-	-		11
Trousses pour l'enseignement individualisé	1	9		3	27		1	9		6	55		-	-		11
Les média audiovisuels (télévision, rubans, films fixes, etc.)	1	9		2	19		4	36		4	36		-	-		11
Autres	-	-		1	9		1	9		9	82		-	-		11

TABLE 14.22

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EN QUELLE MESURE VOS ETUDIANTS UTILISENT-ILS LES RESSOURCES
MENTIONNEES PLUS BAS DANS CE COURS?"

	UTILISATION SOUTENUE		UTILISATION MOYENNE		UTILISATION MINIMALE		AUCUNE UTILISATION		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Manuel de base	6	50	4	33	2	17	-	-	-	-	12
Manuel de base et d'autres manuels complémentaires	-	-	3	25	4	33	5	42	-	-	12
Deux manuels de base ou plus, ou des extraits d'autres manuels	-	-	-	-	1	8	11	92	-	-	12
Matériel de laboratoire	2	17	6	50	3	25	1	8	-	-	12
Notes de cours, et. polycopiées	4	33	4	33	-	-	4	33	-	-	12
Livres de référence, dictionnaires, encyclopédies, journaux, etc.	-	-	2	17	6	50	4	33	-	-	12
Trousses pour l'enseignement individualisé	1	8	-	-	5	42	6	50	-	-	12
Les média audiovisuels (télévision, rubans, films fixes, etc.)	-	-	1	8	7	59	4	33	-	-	12
Autres	-	-	-	-	1	8	11	92	-	-	12

TABLE 14.23
SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EN QUELLE MESURE VOS ETUDIANTS UTILISENT-ILS LES RESSOURCES
MENTIONNEES PLUS BAS DANS CE COURS?"

	UTILISATION SOUTENUE		UTILISATION MOYENNE		UTILISATION MINIMALE		AUCUNE UTILISATION		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Manuel de base	4	33	4	33	3	26	1	8	-	-	12
Manuel de base et d'autres manuels complémentaires	1	8	5	42	2	17	4	33	-	-	12
Deux manuels de base ou plus, ou des extraits d'autres manuels	2	17	-	-	2	17	8	66	-	-	12
Matériel de laboratoire	5	42	4	33	2	17	1	8	-	-	12
Notes de cours, etc. photocopiées	4	33	2	17	5	42	1	8	-	-	12
Livres de référence, dictionnaires encyclopédies, journaux, etc.	-	-	2	16	5	42	5	42	-	-	12
Trousses pour l'enseignement individualisé	-	-	-	-	1	8	11	92	-	-	12
Les média audiovisuels (télévision, rubans, films fixes, etc.)	-	-	1	8	9	75	2	17	-	-	12
Autres	-	-	-	-	-	-	12	100	-	-	12

TABLE 14.24

SECONDARY SCHOOL PHYSIQUE
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "COMBIEN DE TEMPS DEVEZ-VOUS CONSACRER A LA REVISION
 DE LA MATIERE QUI EST Censee ETRE ASSIMILEE AVANT VOTRE COURS?"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
0%	-	-	-	-	-	-
1-10%	6	55	10	83	8	67
11-20%	5	45	2	17	4	33
21-30%	-	-	-	-	-	-
31-40%	-	-	-	-	-	-
41-50%	-	-	-	-	-	-
51-75%	-	-	-	-	-	-
76+%	-	-	-	-	-	-
Total	11	100	12	100	12	100

TABLE 14.25

SECONDARY SCHOOL PHYSIQUE
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "DANS QUELLE MESURE UTILISEZ-VOUS LE FRANCAIS COMME LANGUE
 D'ENSEIGNEMENT DANS VOTRE COURS?"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
100%	9	82	11	100	9	75
90-99%	2	18	-	-	2	17
0-89%	-	-	-	-	1	8
Total	11	100	11	100	12	100

TABLE 14.26

SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"A COMBIEN ESTIMEZ-VOUS LE NOMBRE D'HEURES QUE VOS ETUDIANTS
CONSACRENT A VOTRE COURS EN DEHORS DES HEURES DE CLASSE?"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
0%*	2	18	-	-	-	-
1-25%	8	73	2	18	1	9
26-50%	1	9	6	55	3	27
51-75%	-	-	-	-	1	9
76-100%	-	-	3	27	3	27
101-150%	-	-	-	-	2	19
151-200%	-	-	-	-	1	9
201+%	-	-	-	-	-	-
Total	11	100	11	100	11	100

*La base pour ce pourcentage était le heures accordées au travail en classe. Par exemple, pour deux heures de travail hors de la classe, en rapport avec une heure en classe, le chiffre sera 200.

TABLE 14.27

SECONDARY SCHOOL PHYSIQUE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"LES ETUDIANTS PEUVENT-ILS ETRE DISPENSES DE L'EXAMEN FINAL
SELON LES RESULTATS OBTENUS EN COURS D'ANNEE?"

	L'AN 3 GENERAL		L'AN 3 AVANCE		L'AN 5	
	N	%	N	%	N	%
Oui	4	36	4	33	5	42
Non	4	36	4	33	5	42
Le cours ne comporte pas d'examen final	3	28	4	33	2	16
Total	11	100	12	100	12	100

TABLE 14.28

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examen final*	3	27	2	18	1	10	2	18	3	27	-	-	-	-	-	-	11
Examen semestriel	5	45	1	10	2	18	3	27	-	-	-	-	-	-	-	-	11
Autres tests écrits	1	9	2	18	2	18	2	18	1	9	1	9	2	18	-	-	11
Autres tests oraux	11	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
Problèmes, exercices d'application	2	18	5	46	4	36	-	-	-	-	-	-	-	-	-	-	11
Comptes-rendus de travaux en laboratoire et/ou cahiers de notes	3	27	4	36	3	27	1	10	-	-	-	-	-	-	-	-	11
Participation en laboratoire et/ou en classe	5	45	6	55	-	-	-	-	-	-	-	-	-	-	-	-	11
Devoirs individuels (dissertations, rapports, etc)	6	55	4	36	1	9	-	-	-	-	-	-	-	-	-	-	11
Devoirs de groupe, projets collectifs	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Projets personnels (autres que dissertations, rapports)	9	82	1	9	1	9	-	-	-	-	-	-	-	-	-	-	11
Effort	7	64	4	36	-	-	-	-	-	-	-	-	-	-	-	-	11
Assiduité	9	82	2	18	-	-	-	-	-	-	-	-	-	-	-	-	11
Autre	11	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11

* Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 14.29

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examen final*	4	37	2	13	2	18	1	9	2	18	-	-	-	-	-	-	11
Examen semestriel	4	37	1	9	1	9	3	27	-	-	1	9	1	9	-	-	11
Autres tests écrits	1	9	1	9	2	18	1	9	3	28	1	9	2	18	-	-	11
Autres tests oraux	9	82	2	18	-	-	-	-	-	-	-	-	-	-	-	-	11
Problèmes, exercices d'application	4	36	6	55	1	9	-	-	-	-	-	-	-	-	-	-	11
Comptes-rendus de travaux en laboratoire et/ou cahiers de notes	1	9	7	64	3	27	-	-	-	-	-	-	-	-	-	-	11
Participation en laboratoire et/ou en classe	7	64	4	36	-	-	-	-	-	-	-	-	-	-	-	-	11
Devoirs individuels (dissertations, rapports, etc)	5	45	6	55	-	-	-	-	-	-	-	-	-	-	-	-	11
Devoirs de groupe, projets collectifs	8	73	3	27	-	-	-	-	-	-	-	-	-	-	-	-	11
Projets personnels (autres que dissertations, rapports)	6	55	4	36	1	9	-	-	-	-	-	-	-	-	-	-	11
Effort	8	73	3	27	-	-	-	-	-	-	-	-	-	-	-	-	11
Assiduité	9	82	2	18	-	-	-	-	-	-	-	-	-	-	-	-	11
Autre	11	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11

*Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédé d'arriver à la note finale.

TABLE 14.30

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examen final*	4	34	1	8	3	25	1	8	3	25	-	-	-	-	-	-	12
Examen semestriel	5	42	-	-	3	25	3	25	-	-	1	8	-	-	-	-	12
Autres tests écrits	1	8	-	-	2	17	2	17	4	33	-	-	3	25	-	-	12
Autres tests oraux	11	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	12
Problèmes, exercices d'application	3	25	5	42	3	25	1	8	-	-	-	-	-	-	-	-	12
Comptes-rendus de travaux en laboratoire et/ou cahiers de notes	1	8	5	42	6	50	-	-	-	-	-	-	-	-	-	-	12
Participation en laboratoire et/ou en classe	8	67	4	33	-	-	-	-	-	-	-	-	-	-	-	-	12
Devoirs individuels (dissertations, rapports, etc)	6	50	6	50	-	-	-	-	-	-	-	-	-	-	-	-	12
Devoirs de groupe, projets collectifs	11	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	12
Projets personnels (autres que dissertations, rapports)	10	83	2	17	-	-	-	-	-	-	-	-	-	-	-	-	12
Effort	10	83	2	17	-	-	-	-	-	-	-	-	-	-	-	-	12
Assiduité	10	83	2	17	-	-	-	-	-	-	-	-	-	-	-	-	12
Autre	12	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12

*Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 14.31

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

	BEAUCOUP		IMPORTANCE MOYENNE		TRES PFU		AUCUNE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'étudiant devrait acquérir une attitude de curiosité scientifique	7	70	3	30	-	-	-	-	-	-	10
L'étudiant devrait pouvoir penser d'une façon rationnelle, et, en particulier, il doit pouvoir:											
• organiser les données présentées dans un problème et arriver à une solution	8	80	-	-	2	20	-	-	-	-	10
• évaluer en termes empiriques des comptes-rendus de phénomènes observés	6	60	3	30	1	10	-	-	-	-	10
L'étudiant devrait comprendre la méthode scientifique	4	40	5	50	-	-	1	10	-	-	10
L'étudiant devrait pouvoir appliquer la méthode scientifique à l'étude de comportement de la matière sous l'influence des forces naturelles et à l'étude des propriétés de ces forces comprenant:											
• l'habileté de dessiner une expérience et d'en faire le montage	6	67	3	33	-	-	-	-	-	-	9
• l'habileté de prélever des données expérimentales	8	89	1	11	-	-	-	-	-	-	9
• l'habileté d'organiser et d'analyser les données expérimentales	6	67	3	33	-	-	-	-	-	-	9
• l'habileté d'interpréter les résultats d'expériences en terme de mathématiques et/ou de modèles physiques	4	45	3	33	1	11	1	11	-	-	9
• l'habileté de communiquer les résultats expérimentaux d'une façon concise, critique et profitable, démontrant ainsi bonnes connaissance et compréhension	8	89	1	11	-	-	-	-	-	-	9

TABLE 14.31 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

	BEAUCOUP D'IMPORTANCE		IMPORTANCE MOYENNE		TRES PEU D'IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'étudiant devrait reconnaître que les activités des technologues et des ingénieurs sont des applications des principes de la physique, et il devrait chercher à comprendre ces activités comme telles	4	45	3	33	2	22	-	-	-	-	9
L'étudiant devrait être au courant du développement historique des grandes idées et des concepts de la physique, et de la nature évolutive de ses théories.	-	-	1	11	7	78	1	11	-	-	9

TABLE 14.32

	BEAUCOUP D'IMPORTANCE		IMPORTANCE MOYENNE		TRES PEU D'IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'étudiant devrait acquérir une attitude de curiosité scientifique	8	73	3	27	-	-	-	-	-	-	11
L'étudiant devrait pouvoir penser d'une façon rationnelle, et, en particulier, il doit pouvoir:											
. organiser les données présentées dans un problème et arriver à une solution	9	81	2	18	-	-	-	-	-	-	11
. évaluer en termes empiriques des comptes-rendus de phénomènes observés	8	80	2	20	-	-	-	-	-	-	10
L'étudiant devrait comprendre la méthode scientifique	9	90	1	10	-	-	-	-	-	-	10
L'étudiant devrait pouvoir appliquer la méthode scientifique à l'étude du comportement de la matière sous l'influence des forces naturelles et à l'étude des propriétés de ces forces comprenant:											
. l'habileté de dessiner une expérience et d'en faire le montage	4	36	5	45	2	18	-	-	-	-	11
. l'habileté de prélever des données expérimentales	7	64	4	36	-	-	-	-	-	-	11
. l'habileté d'organiser et d'analyser les données expérimentales	8	73	2	18	1	9	-	-	-	-	11
. l'habileté d'interpréter les résultats d'expériences en terme de mathématiques et/ou de modèles physiques	8	73	2	18	1	9	-	-	-	-	11
. l'habileté de communiquer les résultats expérimentaux d'une façon concise, critique et profitable, démontrant ainsi bonnes connaissances et compréhension	9	81	2	18	-	-	-	-	-	-	11

TABLE 14.32 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

	BEAUCOUP D'IMPORTANCE		IMPORTANCE MOYENNE		TRES PEU D'IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'étudiant devrait reconnaître que les activités des technologues et des ingénieurs sont des applications des principes de la physique, et il devrait chercher à comprendre ces activités comme telles	3	27	6	54	2	19	-	-	-	-	11
L'étudiant devrait être au courant du développement historique des grandes idées et des concepts de la physique, et de la nature évolutive de ses théories.	-	-	10	90	1	10	-	-	-	-	11

TABLE 14.33
SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

	BEAUCOUP		IMPORTANCE MOYENNE		TRES PEU D'IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'étudiant devrait acquérir une attitude de curiosité scientifique	5	42	5	42	2	16	-	-	-	-	12
L'étudiant devrait pouvoir penser d'une façon rationnelle, et, en particulier, il doit pouvoir:											
• organiser les données présentées dans un problème et arriver à une solution	11	92	1	8	-	-	-	-	-	-	12
• évaluer en termes empiriques des comptes-rendus de phénomènes observés	4	33	7	58	1	9	-	-	-	-	12
L'étudiant devrait comprendre la méthode scientifique	9	76	1	8	1	8	-	-	1	8	12
L'étudiant devrait pouvoir appliquer la méthode scientifique à l'étude du comportement de la matière sous l'influence des forces naturelles et à l'étude des propriétés de ces forces comprenant:											
• l'habileté de dessiner une expérience et d'en faire le montage	3	25	6	50	2	17	1	8	-	-	12
• l'habileté de prélever des données expérimentales	9	75	3	25	-	-	-	-	-	-	12
• l'habileté d'organiser et d'analyser les données expérimentales	11	92	1	8	-	-	-	-	-	-	12
• l'habileté d'interpréter les résultats d'expériences en terme de mathématiques et/ou de modèles physiques	10	83	2	17	-	-	-	-	-	-	12
• l'habileté de communiquer les résultats expérimentaux d'une façon concise, critique et profitable, démontrant ainsi bonnes connaissance et compréhension	11	92	1	8	-	-	-	-	-	-	12

TABLE 14.33 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

	BEAUCOUP D'IMPORTANCE		IMPORTANCE MOYENNE		TRES PEU D'IMPORTANCE		AUCUNE IMPORTANCE		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'étudiant devrait reconnaître que les activités des technologues et des ingénieurs sont des applications des principes de la physique, et il devrait chercher à comprendre ces activités comme telles.	2	17	7	58	2	17	1	8	-	-	12
L'étudiant devrait être au courant du développement historique des grandes idées et des concepts de la physique, et de la nature évolutive de ses théories.	3	25	6	50	2	17	1	8	-	-	12

TABLE 14.34 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUEZ, EN POURCENTAGE, LE TEMPS QUE VOUS CONSACREZ A CHACUN DES THEMES"

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Fluides au Repos et en Mouvement	8	73	3	27	-	-	-	-	-	-	-	-	-	-	11
Théorie de la Relativité Restreinte	11	100	-	-	-	-	-	-	-	-	-	-	-	-	11
Propriétés de Particules Fondamentales	11	100	-	-	-	-	-	-	-	-	-	-	-	-	11
Autres Thèmes	9	82	-	-	1	9	1	9	-	-	-	-	-	-	11

TABLE 14.35 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUEZ, EN POURCENTAGE, LE TEMPS QUE VOUS CONSACREZ A CHACUN DES THEMES"

	0%		1-5%		6-10%		11-15%		16-20%		21-25%		26+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Fluides au Repos et en Mouvement	8	67	1	8	3	25	-	-	-	-	-	-	-	-	12
Théorie de la Relativité Restreinte	12	100	-	-	-	-	-	-	-	-	-	-	-	-	12
Propriétés de Particules Fondamentales	12	100	-	-	-	-	-	-	-	-	-	-	-	-	12
Autres Thèmes	11	92	1	8	-	-	-	-	-	-	-	-	-	-	12

TABLE 14.37

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION ^b	
		A	L'ENTREE	A LA SORTIE	A	L'ENTREE	A LA SORTIE	X	s
MESURES		X ^a	s	X	X	s	X	s	%
.Les quantités fondamentales de masse, de longueur et de temps	66	1.6	1.0	2.2	1.0	1.8	1.0	2.4	.9
.Les erreurs	77	.6	.5	1.9	1.2	1.1	.6	2.3	1.0
.Exactitude et précision (chiffres significatifs, arrondissement des nombres)	66	.4	.5	1.6	1.1	.8	.7	1.9	1.1
.S.I.U.	77	1.1	1.4	2.0	1.1	1.6	1.3	2.6	.8
.Analyse dimensionnelle pour développer des relations entre des quantités physiques	77	.6	.9	1.4	1.0	1.0	.9	2.6	1.3
.Consistance des dimensions dans les équations reliant des quantités physiques	77	.3	.7	1.4	1.2	1.0	.9	2.0	1.2
FONCTIONS									
Etant donné un tableau de données expérimentales:	66	.8	.9	2.0	1.0	1.5	.8	2.5	.8
.Dresser un graphique bien étiqueté pour représenter les données	55	.6	.8	1.3	.9	1.1	.7	3.2	1.3
.Ecrire l'équation d'une relation linéaire	22	.2	.4	.7	.8	.5	.8	1.3	1.0
.Dresser un nouveau graphique d'une relation non-linéaire afin d'obtenir une droite, et en établir la relation	0	.0	.0	.0	.0	.0	.0	.0	.0
.Dresser un graphique d'une relation genre puissance sur papier logarithmique double, puis en écrire la relation	0	.0	.0	.0	.0	.0	.0	.0	.0
.Dresser un graphique d'une relation exponentielle sur papier semi-logarithmique, puis en écrire la relation	0	.0	.0	.0	.0	.0	.0	.0	.0
MOUVEMENT									
(cinématique)									
.Mouvement avec accélération uniforme en une, deux ou trois dimensions	55	.3	.5	1.6	.8	1.0	.9	2.3	1.0
.Cinématique rectiligne avec accélération uniforme	55	.3	.5	1.6	.8	1.6	1.2	2.3	1.0

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de zéro (aucune connaissance) à 4 (poussée). Voyez le questionnaire de physique, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 14.37 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION %
		A X	L' S	A X	LA S	A X	L' S	A X	LA S	
MOUVEMENT (Cont'd)										
.Cinématique rectiligne avec accélération variable	33	.2	.4	1.2	1.3	.3	.5	2.0	1.4	8
.Cinématique bidimensionnelle avec accélération uniforme (e.g. le mouvement de projectiles)	22	.0	.0	1.3	1.5	.0	.0	2.0	1.7	0
.Cinématique bidimensionnelle avec accélération variable (e.g. le mouvement circulaire)	0	.0	.0	.0	.0	.0	.0	.3	.6	0
.Cinématique en trois dimensions avec acceleration uniforme	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Cinématique en trois dimensions avec accélération variable	0	.0	.0	.0	.0	.0	.0	.0	.0	0
PRINCIPES DU MOUVEMENT DE NEWTON - DYNAMIQUE PARTICULAIRE										
.La première loi de Newton, masse et inertie	55	.0	.0	1.3	1.0	1.3	1.5	2.2	1.0	33
.La seconde loi de Newton	66	.0	.0	.0	.0	.7	.8	2.1	1.1	33
.La troisième loi de Newton	55	.0	.0	1.5	1.0	.5	.8	2.3	1.0	17
.La résolution et la somme des forces au moyen de dessins à l'échelle	66	.0	.0	1.6	1.5	.3	.5	2.3	1.3	17
.La résolution et la somme des forces par méthodes analytiques	22	.0	.0	1.0	1.7	.2	.4	1.3	1.8	8
.Les cadres de référence	22	.0	.0	.6	.9	.0	.0	.9	.3	8
.Les forces fictives	11	.0	.0	.2	.4	.0	.0	.9	.3	17
.La dynamique du mouvement circulaire	11	.0	.0	.2	.5	.0	.0	.8	.5	0
STATIQUES										
.Les moments	77	.4	.7	2.1	1.4	.6	1.1	2.3	1.3	8
.Lois de l'équilibre	55	.2	.7	1.6	1.5	.5	.8	2.3	1.3	8
.Machines simples, levier, plan incliné, poulies	66	.1	.4	2.0	1.4	.5	.8	2.3	1.3	17
PRINCIPES DU MOUVEMENT DE NEWTON - DYNAMIQUE DE CORPS RIGIDES										
.Le mouvement de translation	44	.2	.4	1.2	1.1	.8	1.0	1.8	1.7	17
.Le mouvement de rotation, la torsion, le moment d'inertie, l'accélération angulaire	0	.0	.0	.0	.0	.2	.4	.4	.9	8
.Le mouvement composé de translation et de rotation	11	.8	1.5	.8	1.5	.5	1.0	1.0	2.0	0
.Le frottement	55	.3	.5	1.8	1.5	.7	.8	2.0	1.4	8

TABLE 14.37 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %		
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S			
FORCE GRAVITATIONNELLE PRES DE LA SURFACE TERRESTRE										
.Distinction entre force gravitationnelle et masse inerte; principe d'équivalence	66	.3	.5	1.6	.9	.9	1.1	2.1	1.1	25
.Le poids et l'accélération gravitationnelle	44	.3	.5	1.3	1.2	1.3	1.0	2.2	1.2	25
.La dynamique du mouvement de projectiles (dans le vide)	11	.4	.9	.6	1.3	.6	.9	1.4	1.7	8
.La dynamique du mouvement de projectiles (avec résistance de l'air)	0	.0	.0	.0	.0	.0	.0	.5	.3	0
.Dépendance de g sur la distance séparant le corps du centre de la terre et sur la latitude	22	.2	.4	.6	.9	.2	.4	.8	.8	0
GRAVITATION UNIVERSELLE										
.Ptolémée, Copernicus, Kepler	22	.0	.0	.7	.6	.3	.6	.7	.6	0
.Les lois de Kepler	11	.0	.0	.3	.6	.0	.0	.3	.6	0
.La loi de la gravitation universelle	33	.0	.0	1.0	.8	.3	.5	1.0	.8	8
.Les orbites circulaires	11	.0	.0	.3	.6	.0	.0	.3	.6	0
.Le mouvement d'un corps sous l'influence d'une force centrale	11	.0	.0	.3	.5	.3	.5	.5	.6	8
QUANTITE DE MOUVEMENT										
.Impulsion et quantité de mouvement	11	.0	.0	1.0	.0	.0	.0	1.0	.0	0
.La conservation de la quantité de mouvement en ligne droite	11	.0	.0	1.0	.0	.0	.0	1.0	.0	0
.Les collisions élastiques (en une seule dimension)	11	.0	.0	1.0	.0	.0	.0	1.0	.0	0
.Les collisions inélastiques (en une seule dimension)	11	.0	.0	1.0	.0	.0	.0	1.0	.0	0
.Les collisions de mobiles en deux dimensions	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.La quantité de mouvement angulaire	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.La conservation de la quantité de mouvement angulaire	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Précession (mouvement rétrograde)	0	.0	.0	.0	.0	.0	.0	.0	.0	0
TRAVAIL, ENERGIE, PUISSANCE										
.Travail accompli par une force constante	88	.5	.8	2.0	.8	.8	.7	2.5	.9	17
.Travail accompli par une force variable (e.g., F = kx)	33	.0	.0	.8	1.0	.2	.4	1.3	1.4	8

TABLE 14.37 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A	L'	X	A	L'	X	A	L'	X
OSCILLATIONS ET ONDES (Cont'd)										
.Relation entre fréquence, longueur d'onde et vitesse de propagation ($V = f\lambda$)	77	.0	.0	2.0	.8	.0	.0	2.4	.5	0
.Ondes se propageant en une seule dimension	77	.0	.0	1.7	1.0	.0	.0	1.4	1.0	8
.Ondes se propageant en deux dimensions	33	.0	.0	.8	1.2	.0	.0	1.0	1.3	0
.La polarisation	0	.0	.0	.0	.0	.0	.0	.3	.5	0
.L'effet Doppler	22	.0	.0	.7	.8	.0	.0	.9	.7	0
.Ondes de choc	0	.0	.0	.0	.0	.0	.0	.3	.5	0
.L'énergie transportée par une onde unidimensionnelle	22	.0	.0	.6	.9	.0	.0	.8	.8	0
.L'intensité relative et absolue des ondes sonores (décibels)	11	.0	.0	.3	.5	.0	.0	.8	.5	0
.L'énergie émise par une source ponctuelle de radiation (la loi de l'inverse du carré de la distance)	33	.0	.0	.5	.5	.0	.0	.8	.8	0
COMPOTEMENT DE LA LUMIERE										
.Discussion qualitative des sources lumineuses	88	.0	.0	1.4	.5	.0	.0	1.4	.5	0
.Propagation rectiligne des ondes lumineuses	77	.0	.0	1.6	.5	.0	.0	1.6	.5	0
.Le concept de l'onde frontale	22	.0	.0	.6	.9	.0	.0	.6	.9	0
.Le principe de Huygens	0	.0	.0	.0	.0	.0	.0	.3	.5	0
.La réflexion des ondes par une surface plane	88	.0	.0	1.8	.5	.1	.4	1.9	.4	8
.La réflexion des ondes par une surface sphérique	66	.0	.0	1.3	.8	.1	.4	1.4	.8	8
.Miroirs convexes et concaves a) dessins à l'échelle b) traitement analytique	100 77	.0 .0	.0 .0	2.0 1.8	.7 .9	.2 .1	.4 .4	2.2 2.0	.8 1.0	17 8
.La réfraction des ondes par une surface plane séparant deux milieux	77	.0	.0	1.4	.5	.0	.0	1.7	.5	0
.Le concept de l'indice de réfraction (loi de Snell- Descartes)	58	.0	.0	1.6	.5	.2	.4	2.5	.8	8
.La réflexion totale interne	88	.0	.0	1.4	.5	.0	.0	1.6	.8	0
.La réfraction dans un prisme	100	.0	.0	1.3	.5	.1	.4	1.4	.5	8
.Le spectromètre à prisme - déviation minimale	11	.0	.0	.3	.5	.0	.0	.3	.5	0
.La puissance de dispersion d'un milieu	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.La réfraction à une surface sphérique séparant deux milieux	11	.0	.0	.4	.9	.0	.0	.0	.0	0

TABLE 14.37 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %	
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S		
COMPORTEMENT DE LA LUMIERE (Cont'd)									
.L'équation d'occuliste pour les lentilles	22	.0	.0	.6	.9	.0	.0	.8	0
.L'équation des lentilles minces	66	.0	.0	1.7	.5	.0	.0	.7	0
.La formation des images par les lentilles	88	.0	.0	2.0	.5	.0	.0	2.0	.8
a) dessins à l'échelle	66	.0	.0	1.7	.5	.3	.8	1.8	.8
b) traitement analytique	55	.0	.0	.8	.7	.0	.0	1.0	.8
.La puissance d'une lentille	33	.0	.0	.6	.5	.0	.0	.8	.4
.L'aberration chromatique	11	.0	.0	.3	.5	.0	.0	.5	.8
.Les aberrations monochromatiques	77	.1	.4	1.3	.7	.3	.5	1.4	.8
.L'oeil et la caméra									
.Les defectuosités de l'oeil et les lentilles correctives	55	.0	.0	.8	.4	.3	.5	1.2	.8
.Les microscopes simple et composé	55	.0	.0	.8	.7	.3	.5	1.1	.7
.Le télescope	44	.0	.0	.8	.8	.3	.5	1.2	.8
INTERFERENCE ET DIFFRACTION									
.Superposition d'impulsions et/ou d'ondes	44	.0	.0	.8	.8	.0	.0	.8	.8
.Réflexion et transmission d'impulsions et d'ondes à la frontière de deux milieux	33	.0	.0	.8	.8	.0	.0	.8	.8
.Ondes stationnaires sur un fil, les extrémités étant fixes	44	.0	.0	.8	.8	.2	.4	.8	.8
.Ondes stationnaires dans une colonne à bouts ouverts	22	.0	.0	.8	1.1	.2	.4	1.0	1.0
.Ondes stationnaires dans une colonne dont un bout est fermé, l'autre ouvert	33	.0	.0	.8	.8	.2	.4	1.0	1.0
.Interférence d'ondes périodiques, deux sources ponctuelle dans un milieu bidimensionnel	22	.0	.0	.6	.9	.0	.0	.8	.8
.Les effets d'interférence au moyen de fentes doubles (l'expérience de Young)	22	.0	.0	.3	.5	.0	.0	.5	.5
.Les effets d'interférence au moyen de fentes multiples	0	.0	.0	.0	.0	.0	.0	.3	.5
.La diffraction de Fraunhofer au moyen d'une arête droite	0	.0	.0	.0	.0	.0	.0	.0	.0
.La diffraction de Fraunhofer au moyen d'une fente simple (interférence due à une fente simple)	0	.0	.0	.0	.0	.0	.0	.0	.0
.La diffraction de Fraunhofer au moyen d'un orifice circulaire	0	.0	.0	.0	.0	.0	.0	.0	.0

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TABLE 14.37 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPÉTENCE MOYENNE À L'ENTRÉE ET LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PRÉFÉRÉ			MECONTENTEMENT DE LA PRÉPARATION	
		A	L'	À LA SORTIE	A	L'	À LA SORTIE	S	%
		X	S	X	X	S	X	S	
INTERFERENCE ET DIFFRACTION (Cont'd)									
.La diffraction de Fraunhofer au moyen d'une grille optique	0	.0	.0	.0	.0	.0	.0	.0	0
.Le critère de résolution de Rayleigh	0	.0	.0	.0	.0	.0	.0	.0	0
.Puissance de résolution d'une grille à diffraction	0	.0	.0	.0	.0	.0	.0	.0	0
.Le spectromètre à grille à diffraction	0	.0	.0	.0	.0	.0	.0	.0	0
.La diffraction de Fresnel	0	.0	.0	.0	.0	.0	.0	.0	0
.Les effets d'interférence dans les pellicules minces parallèles	0	.0	.0	.0	.0	.0	.0	.0	0
.L'interféromètre de Michelson	0	.0	.0	.0	.0	.0	.0	.0	0
.Les effets d'interférence dans les pellicules minces non parallèles	0	.0	.0	.0	.0	.0	.0	.0	0
ELECTRICITE ET MAGNETISME									
.L'électrostatique	77	.5	.8	1.6	.5	.7	.8	1.6	.5
.La force électrique (loi de Coulomb)	44	.4	.9	1.6	.5	.8	.8	1.8	.4
.Le champ électrique	55	.3	.8	1.3	.5	.5	.8	1.5	.5
.Energie potentielle électrique	55	.3	.8	1.5	.5	.5	.8	1.7	.5
.Différence de potentiel électrique - le volt	88	.3	.7	1.9	.6	.5	.8	2.0	.5
.Les sources de force électromotrice	66	.3	.8	1.7	.8	.5	.8	1.8	.8
.L'expérience de Millikan	0	.0	.0	.0	.0	.0	.0	.0	0
.Le mouvement d'une charge électrique - l'ampère	88	.0	.0	1.8	.8	.3	.5	1.8	.9
.La loi d'Ohm - résistance constante	88	.4	1.0	2.1	.6	.6	1.1	2.3	.7
.La résistance d'un conducteur	88	.3	1.0	2.1	.6	.5	1.1	2.4	.5
.Les circuits à courant continu	66	.4	1.1	1.8	.9	.6	1.1	2.0	.8
.Les lois de Kirchhoff	11	.0	.0	.8	1.5	.0	.0	.8	1.5
.La capacité électrique	33	.0	.0	.7	.8	.0	.0	1.2	1.2
.Les propriétés de diélectriques	22	.6	1.3	1.0	1.2	.6	1.3	1.2	1.1
.Les facteurs de transformations dans les circuits redressés	22	.8	1.5	1.8	1.5	.8	1.5	1.8	1.5
.La puissance électrique dans les circuits à courant continu (DC)	55	.5	1.2	2.0	.6	.5	1.2	2.3	.5
.Le magnétisme	100	.1	.3	.5	1.2	.4	.5	1.8	.7
.Le champ magnétique	100	.1	.3	1.6	.5	.5	.5	1.9	.6

TABLE 14.37 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPÉTENCE MOYENNE À L'ENTRÉE ET LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PRÉFÉRÉ			MECONTENTEMENT DE LA PRÉPARATION %
		A X	L'ENTRÉE S	A LA SORTIE X S	A L'ENTRÉE S	A LA SORTIE X S	DE LA PRÉPARATION S	
ELECTRICITE ET MAGNETISME (Cont'd)								
.La force agissant sur une charge électrique se déplaçant dans un champ magnétique	44	.0	.0	.8 .8	.0	.0	.8 .4	0
.Le rapport de la charge de l'électron à sa masse	22	.0	.0	.5 .6	.3	.5	.8 1.0	8
.Le champ magnétique dû au mouvement d'une charge électrique	44	.0	.0	1.2 1.0	.0	.0	1.4 .9	0
.Force agissant sur un conducteur porteur de courant dans un champ magnétique uniforme	44	.0	.0	1.2 1.0	.0	.0	1.4 .9	0
.Instruments de mesure électriques-galvanomètres	88	.0	.0	1.4 .7	.1	.4	1.8 .7	8
.Les moteurs électriques	88	.0	.0	1.3 .7	.1	.4	1.6 .5	8
.F.E.M. dans un conducteur se déplaçant dans un champ magnétique uniforme - loi de Lenz	22	.0	.0	1.0 1.2	.0	.0	1.3 .6	0
.Inductance	0	.0	.0	.0 .0	.0	.0	1.3 1.0	0
.La génératrice AC	33	.0	.0	.8 .8	.0	.0	1.5 .6	0
.La génératrice DC	33	.0	.0	.6 .5	.0	.0	1.4 .5	0
.Les circuits AC	44	.0	.0	.8 .8	.0	.0	1.3 .8	0
.Les transformateurs	55	.0	.0	1.3 1.0	.0	.0	1.7 .8	0
.L'hystérésis	0	.0	.0	.0 .0	.0	.0	.0 .0	0
.Le spectre électromagnétique	33	.0	.0	.6 .5	.0	.0	1.0 .7	0
STRUCTURE DE L'ATOME								
.Le modèle de l'atome selon Thomson	44	.0	.0	1.0 .7	.3	.5	1.0 .8	8
.L'expérience de Rutherford: déviation du faisceau de particules alpha	22	.0	.0	.6 .9	.3	.5	.5 1.0	8
.Le modèle de l'atome selon Rutherford ("système solaire")	33	.0	.0	.8 .8	.3	.5	.8 1.0	8
.Les propriétés de l'électron	44	.0	.0	1.0 .7	.3	.5	1.0 .8	8
.L'effet photoélectrique (photons)	11	.0	.0	.2 .5	.0	.0	.3 .6	0
.L'effet Compton	0	.0	.0	.0 .0	.0	.0	.0 .0	0
.Dualité particule - onde de la radiation	0	.0	.0	.0 .0	.0	.0	.0 .0	0
.Dualité particule - onde de la matière (de Broglie)	0	.0	.0	.0 .0	.0	.0	.0 .0	0
.Les spectres à raies (évidence historique, les séries de Balmer, etc)	0	.0	.0	.0 .0	.0	.0	.0 .0	0

TABLE 14.37 (Cont'd)

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A LA SORTIE X S	A L'ENTREE X S	A LA SORTIE X S		
STRUCTURE DE L'ATOME (Cont'd)								
Les niveaux distincts d'énergie d'électrons (expérience de Franck et Hertz)	0	.0	.0	.0	.0	.0	.0	0
Les niveaux d'énergie dans l'atome d'hydrogène (modèle selon Bohr)	11	.5	1.0	.5	1.0	.3	.5	8
PHYSIQUE NUCLEAIRE								
La désintégration d'atomes radioactives	33	.0	.0	.7	.9	.3	.5	8
Radiations alpha, beta, gamma: propriétés et spectres	11	.0	.0	.7	.9	.0	.0	0
Dépistage de la radiation	11	.0	.0	.7	.9	.0	.0	0
Structure du noyau	33	.0	.0	1.3	1.0	.3	.6	8
Propriétés des nucléons	11	.0	.0	.7	.9	.0	.0	0
Les réactions nucléaires - nature générale	11	.0	.0	.7	.9	.0	.0	0
La fission nucléaire	22	.0	.0	1.3	1.2	.3	.6	8
La fusion nucléaire	22	.0	.0	1.3	1.2	.3	.6	8
Les dangers de radiation	22	.0	.0	1.0	1.0	.0	.0	0
TEMPERATURE ET CHALEUR								
Température								
a) échelles	55	.8	1.0	1.6	.9	1.0	.9	8
b) méthodes de mesure	44	1.0	1.7	2.2	1.0	1.3	1.5	17
Dilatation thermique	55	.6	.9	2.0	1.2	.8	1.1	8
Chaleur								
a) Théorie cinétique	33	1.0	1.7	1.8	1.5	1.0	1.7	0
b) Distribution des vitesses d'après Maxwell	0	.0	.0	.0	.0	.0	.0	0
c) Transformation d'énergie mécanique en énergie thermique								
d) Chaleur spécifique	33	.0	.0	.6	.5	.2	.4	8
e) Calorimétrie	55	.2	.4	1.6	.8	.3	.5	8
f) Les lois des gaz	44	.3	.8	1.5	.8	.5	.8	8
g) Les changements de phases	11	.0	.0	.5	1.0	.3	.5	8
h) La tension de vapeur et l'humidité	33	.0	.0	.9	1.1	.3	.5	8
Transfert de chaleur	11	.3	.6	.5	.6	.3	.5	0
a) Convection	33	.2	.4	1.0	.7	.4	.5	8
b) Conduction	44	.2	.4	1.0	.6	.3	.5	8
c) Radiation	33	.2	.4	1.0	.7	.4	.5	8
Thermodynamique								
a) Premier principe	0	.0	.0	.0	.0	.0	.0	0
b) Second principe	0	.0	.0	.0	.0	.0	.0	0
c) Cycle de Carnot	0	.0	.0	.0	.0	.0	.0	0

TABLE 14.37 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE A MOYENNE A L'ENTREE ET LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A	L'ENTREE X	A LA SORTIE S	A	L'ENTREE X	A LA SORTIE S	
PROPRIETES DES SOLIDES, AUTRES QUE THERMIQUES								
.Les propriétés cristallographiques de corps solides simples	0	.0	.0	.0	.0	.0	.0	0
.Les propriétés d'élasticité, la loi de Hooke, modules et obéissance sous l'effet des forces	33	.0	.0	1.0	.7	.0	.0	0
.Les propriétés électroniques: structure des lièsières; conducteurs, semi-conducteurs et isolants	22	.0	.0	.7	.6	.0	.0	0
.Les propriétés électroniques, la diode	22	.0	.0	.8	1.0	.0	.0	0
.Les propriétés électroniques, le transistor	11	.0	.0	.3	.6	.0	.0	0
FLUIDES AU REPOS ET EN MOUVEMENT								
.Densité absolue et relative	33	1.2	1.5	2.5	1.0	1.5	1.3	8
.Pression atmosphérique - le baromètre	33	.0	.0	1.5	1.3	.5	.6	17
.Pression hydrostatique - loi de Pascal	33	.0	.0	1.7	1.2	.7	1.2	8
.Le principe d'Archimède - la poussée d'un liquide (flottabilité)	33	.0	.0	2.0	1.7	.3	.6	8
.Tension superficielle et l'action capillaire	11	.0	.0	.5	.7	.0	.0	0
.L'écoulement de fluides, les conditions d'enchaînement	11	.0	.0	.3	.6	.0	.0	0
.L'écoulement aérodynamique	11	.0	.0	.3	.6	.0	.0	0
.Le principe de Bernoulli	33	.0	.0	.8	.5	.3	.5	8
.L'écoulement turbulent	0	.0	.0	.0	.0	.0	.0	0
.La viscosité	33	.0	.0	.8	.5	.3	.5	8
.Loi de Poiseuille	0	.0	.0	.0	.0	.0	.0	0
THEORIE DE LA RELATIVITE RESTREINTE	0	.0	.0	.0	.0	.0	.0	0
PROPRIETES DE PARTICULES FONDAMENTALES (autres que le proton, le neutron ou l'électron)	0	.0	.0	.0	.0	.0	.0	0
AUTRES THEMES	0	.0	.0	.0	.0	.5	.7	1.0 1.4

TABLE 14.38

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPÉTENCE MOYENNE A L'ENTRÉE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PRÉFÉRÉ			MECONTENTEMENT DE LA PRÉPARATION %		
		A X ^a	L' S	A LA SORTIE X S	A X	L' S	A LA SORTIE X S			
MESURES										
.Les quantités fondamentales de masse, de longueur et de temps	63	1.1	.9	2.1	.7	1.4	.8	2.4	.7	25
.Les erreurs	72	.4	.7	1.6	1.1	.9	1.2	1.8	1.2	33
.Exactitude et précision (chiffres significatifs, arrondissement des nombres)	81	.4	.7	1.5	1.0	.9	1.1	2.0	1.1	42
.S.I.U.	90	.6	.9	2.0	.6	1.2	.9	2.5	.7	42
.Analyse dimensionnelle pour développer les relations entre des quantités physiques	81	.4	.8	1.6	1.0	1.1	1.1	2.0	1.0	42
.Consistance des dimensions dans les équations reliant des quantités physiques	81	.3	.7	1.5	.8	.8	.8	2.0	.5	33
FONCTIONS										
Etant donné un tableau de données expérimentales:										
.Dresser un graphique bien étiqueté pour représenter les données	72	.9	.8	2.3	1.0	1.2	1.0	1.8	1.5	33
.Ecrire l'équation d'une relation linéaire	63	1.9	.9	2.1	.9	1.3	.8	2.4	1.2	33
.Dresser un nouveau graphique d'une relation non-linéaire afin d'obtenir une droite, et en établir la relation	54	.2	.7	1.7	1.0	1.0	1.1	2.0	1.4	42
.Dresser un graphique d'une relation genre puissance sur papier logarithmique double, puis en écrire la relation	9	.0	.0	.4	.9	.3	.5	.7	1.6	8
.Dresser un graphique d'une relation exponentielle sur papier semi-logarithmique, puis en écrire la relation	9	.0	.0	.4	.9	.3	.5	.7	1.6	8
MOUVEMENT										
(cinématique)										
.Mouvement avec accélération uniforme en une, deux ou trois dimensions	90	.2	.4	1.9	.8	.7	.6	2.5	.7	33
.Cinématique rectiligne avec accélération uniforme	90	.2	.4	2.1	.5	.8	.7	2.6	.8	42

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de zéro (aucune connaissance à 4 (poussée)). Voyez le questionnaire de physique, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 14.38 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPÉTENCE MOYENNE À L'ENTRÉE ET À LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %		
		A $\frac{L}{X}$	L'ENTREE S	A LA SORTIE $\frac{X}{S}$	A $\frac{L}{X}$	L'ENTREE S	A LA SORTIE $\frac{X}{S}$			
.Cinématique rectiligne avec accélération variable	54	.1	.3	1.3	1.2	.4	.7	1.6	1.7	17
.Cinématique bidimensionnelle avec accélération uniforme (e.g. le mouvement de projectiles)	54	.2	.4	1.5	1.3	.7	.7	2.1	1.5	33
.Cinématique bidimensionnelle avec accélération variable (e.g. le mouvement circulaire)	18	.0	.0	1.2	1.2	.0	.0	.7	1.0	0
.Cinématique en trois dimensions avec accélération uniforme	18	.0	.0	.6	1.0	.0	.0	.7	1.3	0
.Cinématique en trois dimensions avec accélération variable	0	.0	.0	.0	.0	.0	.0	.0	.0	0
PRINCIPES DU MOUVEMENT DE NEWTON - DYNAMIQUE PARTICULAIRE										
.La première loi de Newton, masse et inertie	100	.4	.5	2.2	.4	.7	1.3	2.5	.8	25
.La seconde loi de Newton	100	.4	.5	2.3	.5	.8	.8	2.6	.8	33
.La troisième loi de Newton	90	.4	.5	1.8	.9	.8	.9	2.2	.8	25
.La résolution et la somme des forces au moyen de dessins à l'échelle	90	.2	.4	2.1	.6	.5	.7	2.5	.7	33
.La résolution et la somme des forces par méthodes analytiques	72	.2	.4	1.1	1.1	.7	.7	1.9	1.3	33
.Les cadres de référence	36	.1	.3	.8	1.1	.2	.4	1.0	1.4	8
.Les forces fictives	18	.1	.4	.5	1.2	.3	.5	1.0	1.5	8
.La dynamique du mouvement circulaire	18	.0	.0	.3	.5	.1	.4	.4	.8	8
STATIQUES										
.Les moments	18	2.0	.4	1.2	1.3	.8	.8	2.2	.4	25
.Lois de l'équilibre	36	2.0	.4	1.6	1.1	1.0	1.2	2.6	.5	25
.Machines simples, levier, plan incliné, poulies	36	.4	.9	2.0	1.2	.6	.9	2.6	.5	8
PRINCIPES DU MOUVEMENT DE NEWTON - DYNAMIQUE DE CORPS RIGIDES										
.Le mouvement de translation	18	.2	.5	.8	1.0	.5	1.0	1.3	1.5	8
.Le mouvement de rotation, la torsion, le moment d'inertie	9	.2	.5	.3	.5	.5	1.0	.8	1.5	8
.L'accélération angulaire	9	.8	1.5	.8	1.5	.5	1.0	1.0	2.0	8
.Le mouvement composé de translation et de rotation	27	.2	.5	1.8	1.2	.5	1.0	2.0	1.6	8
.Le frottement										

TABLE 14.38 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A \bar{x}	L'ENTREE s	A LA SORTIE \bar{x} s	A \bar{x}	L'ENTREE s	A LA SORTIE \bar{x} s	
FORCE GRAVITATIONNELLE PRES DE LA SURFACE TERRESTRE								
.Distinction entre force gravitationnelle et masse inerte; principe d'équivalence	81	.1	.3	1.5	.9	.7	2.1 1.1	42
.Le poids et l'accélération gravitationnelle	90	.2	.4	2.0	.8	.8	2.2 .8	50
.La dynamique du mouvement de projectiles (dans le vide)	45	.1	.3	1.0	1.1	.6	.7 .6	33
.La dynamique du mouvement de projectiles (avec résistance de l'air)	36	.2	.3	1.0	1.2	.3	.5 1.4 1.3	17
.Dépendance de g sur la distance séparant le corps du centre de la terre et sur la latitude	54	.1	.3	1.1	1.3	.3	.5 1.7 1.3	17
GRAVITATION UNIVERSELLE								
.Ptolémée, Copernicus, Kepler	27	.0	.0	.8	1.2	.2	.4 1.0 1.7	8
.Les lois de Kepler	18	.0	.0	.8	1.3	.2	.4 1.2 1.6	8
.La loi de la gravitation universelle	63	.3	.5	2.0	.8	.7	.5 2.5 .8	17
.Les orbites circulaires	18	.2	.5	.8	1.0	.5	.6 1.0 1.2	8
.Le mouvement d'un corps sous l'influence d'une force centrale	9	.0	.0	.3	.5	.0	.0 .5 .6	0
QUANTITE DE MOUVEMENT								
.Impulsion et quantité de mouvement	18	.5	.7	1.5	.7	.5	.7 1.5 .7	0
.La conservation de la quantité de mouvement en ligne droite	18	.5	.7	1.5	.7	.5	.7 1.5 .7	0
.Les collisions élastiques (en une seule dimension)	18	.0	.0	1.0	.0	.0	.0 1.0 .0	0
.Les collisions inélastiques (en une seule dimension)	0	.0	.0	.0	.0	.0	.0 .0 .0	0
.Les collisions de mobiles en deux dimensions	0	.0	.0	.0	.0	.0	.0 .0 .0	0
.La quantité de mouvement angulaire	0	.0	.0	.0	.0	.0	.0 .0 .0	0
.La conservation de la quantité de mouvement angulaire	0	.0	.0	.0	.0	.0	.0 .0 .0	0
.Précession (mouvement rétrograde)	0	.0	.0	.0	.0	.0	.0 .0 .0	0
TRAVAIL, ENERGIE, PUISSANCE								
.Travail accompli par une force constante	90	.5	.8	2.2	.8	.6	.7 2.7 .7	8
.Travail accompli par une force variable (e.g., $F = kx$)	63	.6	.8	1.6	1.3	1.3	.6 2.1 1.4	0

TABLE 14.38 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNE	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A L'ENTREE \bar{x}	A LA SORTIE s	A LA SORTIE \bar{x}	A L'ENTREE s	A LA SORTIE \bar{x}	A LA SORTIE s			
.Travail accompli par une force variable (e.g., Ex $1/r$)	27	.2	.5	.8	1.2	.4	.5	1.4	1.5	0
.Travail accompli dans la compression d'un gaz	45	.2	.4	.9	1.1	.4	.5	1.1	1.4	17
.L'énergie cinétique; la relation entre l'énergie cinétique et le travail mécanique	90	.4	.7	1.9	.8	.6	.7	2.4	.7	17
.L'énergie potentielle où la force est constante (e.g., mgh)	100	.4	.7	2.0	.6	.6	.7	2.5	.7	17
.L'énergie potentielle où la force est variable (e.g., $\frac{1}{2}kx$ ou $Gm_1 m_2$)	45	.2	.4	1.0	1.1	.3	.5	1.1	1.2	17
r										
.Conservation de l'énergie mécanique (transformations d'énergies cinétique et potentielle)	90	.2	.4	1.7	.9	.5	.5	2.5	.7	25
.Puissance	90	.4	.7	1.9	.8	.6	.7	2.4	.7	17
.Efficacité du travail	81	.4	.7	1.6	1.0	.7	.8	2.4	.8	25
OSCILLATIONS ET ONDES										
.Les oscillations	100	.2	.4	1.6	.7	.3	.5	2.0	.7	8
.Description cinématique du mouvement harmonique simple, ($y = A \sin \omega t$ ou cercle de référence)	9	.0	.0	.2	.4	.0	.0	.3	.8	0
.Le mouvement d'une particule sous l'influence d'une force harmonique ($F = -kx$)	18	.0	.0	.3	.5	.0	.0	.5	.8	0
.Solutions de l'équation du mouvement pour un système oscillateur (seconde loi de Newton)	18	.2	.4	.7	1.0	.2	.4	.7	1.0	0
.Une masse accrochée à un ressort	81	.3	.5	1.8	.7	.4	.5	2.0	.8	17
.Le pendule simple (où l'angle d'écartement de la verticale est faible, permettant les approximations d'usage)	54	.3	.5	1.6	1.0	.4	.8	1.9	1.1	17
.Le pendule rigide (où l'angle d'écartement est faible)	9	.0	.0	.2	.4	.2	.4	.2	.4	8
.Les oscillations de torsion	9	.0	.0	.2	.4	.0	.0	.4	.5	0
.La conservation de l'énergie dans les oscillations libres	45	.0	.0	1.0	.8	.1	.4	1.3	.8	8
.Taux exponentiel de la décadence des oscillations	18	.0	.0	.3	.5	.2	.4	.5	.8	8
.Dérivation de l'équation différentielle exprimant la propagation des ondes à compression dans un gaz ou des ondes transversales dans un fil	0	.0	.0	.0	.0	.0	.0	.0	.0	0

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TABLE 14.38 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION	
		A X	L'ENTREE s	A LA SORTIE X	s	A X	L'ENTREE s	A LA SORTIE X	s		
.Relation entre fréquence, longueur d'onde et vitesse de propagation ($V = f\lambda$)	100	.1	.3	2.2	.6	.3	.5	2.5	.5	17	
.Ondes se propageant en une seule dimension	100	.2	.4	1.8	.6	.3	.5	2.0	.7	8	
.Ondes se propageant en deux dimensions	27	.1	.4	1.5	.5	.3	.5	1.7	.8	8	
.La polarisation	9	.0	.0	.1	.4	.1	.4	.3	.8	8	
.L'effet Doppler	45	.1	.3	1.0	1.0	.1	.3	1.3	.9	0	
.Ondes de choc	18	.0	.0	.3	.5	.1	.4	.6	.8	8	
.L'énergie transportée par une onde unidimensionnelle	54	.0	.0	1.1	.8	.3	.8	1.4	.9	17	
.L'intensité relative et absolue des ondes sonores (décibels)	36	.1	.4	1.0	1.0	.3	.8	1.4	1.1	25	
.L'énergie émise par une source ponctuelle de radiation (la loi de l'inverse du carré de la distance)	36	.0	.0	.7	.8	.1	.4	.9	.9	8	
COMPORTEMENT DE LA LUMIERE											
.Discussion qualitative des sources lumineuses	81	.4	.5	1.6	.8	.6	.7	1.9	.8	8	
.Propagation rectiligne des ondes lumineuses	90	.4	.5	2.0	.7	.6	.7	2.1	.7	8	
.Le concept de l'onde frontale	72	.1	.3	1.6	.7	.4	.7	1.8	.9	8	
.Le principe de Huygens	36	.0	.0	1.2	1.0	.3	.8	1.3	1.2	8	
.La réflexion des ondes par une surface plane	45	.5	.7	2.2	.8	.7	.9	2.3	.7	8	
.La réflexion des ondes par une surface sphérique	72	.5	.5	2.1	.6	.9	1.0	2.3	.7	25	
.Miroirs convexes et concaves											
a) dessins à l'échelle	90	.4	.5	2.4	.5	.4	.5	2.6	.5	0	
b) traitement analytique	90	.2	.4	2.2	.6	.3	.5	2.4	.5	8	
.La réfraction des ondes par une surface plane séparant deux milieux	90	.4	.5	1.9	.6	.4	.5	2.3	.7	0	
.Le concept de l'indice de réfraction (loi de Snell-Descartes)	81	.2	.4	1.9	.9	.2	.4	2.1	1.1	0	
.La réflexion totale interne	81	.3	.5	1.8	.8	.4	.5	2.1	.9	8	
.La réfraction dans un prisme	90	.4	.5	1.9	.6	.4	.5	2.3	.5	0	
.Le spectromètre à prisme - déviation minimale	9	.0	.0	.2	.4	.2	.4	.3	.8	8	
.La puissance de dispersion d'un milieu	9	.0	.0	.2	.4	.2	.4	.3	.8	8	
.La réfraction à une surface sphérique séparant deux milieux	18	.0	.0	.3	.5	.0	.0	.2	.4	0	

TABLE 14.38 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS % QUI ENSEIGNENT	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A X	LA SORTIE S	A X	L'ENTREE S	A X	LA SORTIE S	
.L'équation d'occuliste pour les lentilles	54	.0	.0	1.5	1.2	.1	.4	1.9	1.0	8
.L'équation des lentilles minces	72	.1	.3	1.7	1.1	.1	.3	1.8	1.2	0
.La formation des images par les lentilles	90	.3	.5	1.9	.6	.3	.7	2.3	.7	8
a) dessins à l'échelle	72	.2	.5	2.1	.4	.4	.8	2.4	.5	8
b) traitement analytique	36	.2	.4	1.3	.8	.2	.4	1.5	.8	0
.La puissance d'une lentille	54	.1	.4	1.0	.0	.2	.4	1.3	.5	0
.L'aberration chromatique	36	.2	.4	.7	.5	.2	.4	1.0	.9	0
.Les aberrations monochromatiques	81	.1	.3	1.3	.5	.1	.4	1.4	.5	0
.L'oeil et la caméra	81	.2	.4	1.5	.5	.1	.4	1.6	.5	0
.Les défauts des lentilles correctives	81	.1	.3	1.4	.5	.1	.4	1.6	.5	0
.Les microscopes simple et composé	81	.1	.3	1.3	.5	.1	.4	1.5	.5	0
.Le télescope										
INTERFERENCE ET DIFFRACTION										
.Superposition d'impulsions et/ou d'ondes	72	.0	.0	1.3	.7	.1	.4	1.3	.7	8
.Réflexion et transmission d'impulsions et d'ondes à la frontière de deux milieux	81	.0	.0	1.3	.7	.1	.3	1.1	.7	8
.Ondes stationnaires sur un fil, les extrémités étant fixes	81	.0	.0	1.7	.8	.2	.4	1.9	.3	17
.Ondes stationnaires dans une colonne à bouts ouverts	63	.1	.3	1.5	1.0	.2	.4	1.8	1.1	8
.Ondes stationnaires dans une colonne dont un bout est fermé, l'autre ouvert	63	.0	.0	1.6	1.0	.1	.4	1.8	1.2	8
.Interférence d'ondes périodiques, deux sources ponctuelles dans un milieu bidimensionnel	63	.1	.4	1.2	.7	.3	.8	1.5	.9	8
.Les effets d'interférence au moyen de fentes doubles (l'expérience de Young)	36	.1	.4	.6	.5	.3	.5	1.1	.9	8
.Les effets d'interférence au moyen de fentes multiples	8	.1	.4	.4	.5	.3	.5	1.1	.9	8
.La diffraction de Fraunhofer au moyen d'une arête droite	18	.0	.0	.3	.5	.2	.4	.5	.8	8
.La diffraction de Fraunhofer au moyen d'une fente simple (interférence due à une fente simple)	27	.0	.0	.5	.5	.2	.4	.8	1.0	8
.La diffraction de Fraunhofer au moyen d'un orifice circulaire	0	.0	.0	.0	.0	.0	.0	.2	.4	0
.La diffraction de Fraunhofer au moyen d'une grille optique	9	.0	.0	.2	.4	.0	.0	.4	.5	0
.Le critère de résolution de Rayleigh	9	.0	.0	.1	.4	.2	.4	.3	.5	8

TABLE 14.38 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPÉTENCE MOYENNE À L'ENTRÉE ET À LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PRÉFÉRÉ			RECONTENTEMENT DE LA PRÉPARATION %		
		A X	L'ENTRÉE S	À LA SORTIE S	A X	L'ENTRÉE S	À LA SORTIE S			
.Puissance de résolution d'une grille à diffraction	9	.0	.0	.1	.4	.2	.4	.5	.8	8
.Le spectromètre à grille à diffraction	9	.0	.0	.1	.4	.2	.4	.3	.5	8
.La diffraction de Fresnel	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Les effets d'interférence dans les pellicules minces parallèles	0	.0	.0	.0	.0	.0	.0	.3	.5	0
.L'interféromètre de Michelson	9	.0	.0	.2	.4	.2	.4	.4	.5	8
.Les effets d'interférence dans les pellicules minces non parallèles	0	.0	.0	.0	.0	.0	.0	.3	.5	0
ELECTRICITE ET MAGNETISME										
.L'électrostatique	100	.5	.5	2.0	.6	.7	.9	2.5	.8	17
.La force électrique (loi de Coulomb)	72	.3	.7	1.6	.8	.4	.7	2.1	1.1	8
.Le champ électrique	81	.1	.4	1.5	.8	.6	1.0	1.8	1.2	8
.Energie potentielle électrique	81	.2	.4	1.8	.9	.3	.5	2.0	.9	8
.Différence de potentiel électrique - le volt	90	.2	.4	2.0	.6	.5	.7	2.3	.7	17
.Les sources de force électromotrice	90	.2	.4	1.9	.7	.3	.5	2.2	1.0	17
.L'expérience de Millikan	18	.1	.4	.5	.8	.3	.5	.9	1.2	8
.Le mouvement d'une charge électrique - l'ampère	90	.2	.4	2.1	.5	.4	.5	2.5	.7	17
.La loi d'Ohm - résistance constante	90	.2	.4	2.1	.5	.4	.7	2.5	.7	17
.La résistance d'un conducteur	90	.2	.4	1.9	.7	.4	.7	2.4	.7	17
.Les circuits à courant continu	100	.2	.4	2.1	.5	.2	.4	2.3	.5	8
.Les lois de Kirchhoff	45	.0	.0	1.2	1.0	.3	.5	1.5	1.3	17
.La capacité électrique	54	.0	.0	1.4	.9	.3	.5	1.8	1.2	17
.Les propriétés de diélectriques	9	.0	.0	.2	.4	.0	.0	.3	.5	0
.Les facteurs de transformations dans les circuits redressés	0	.0	.0	.0	.0	.2	.4	.5	.8	0
.La puissance électrique dans les circuits à courant continu (DC)	90	.1	.3	1.9	.6	.4	.7	2.3	.5	17
.Le magnétisme	100	.4	.5	1.8	.8	.6	.7	2.1	.9	8
.Le champ magnétique	90	.4	.5	1.5	.7	.6	.7	2.0	.9	17
.La force agissant sur une charge électrique se déplaçant dans un champ magnétique	63	.1	.3	1.1	.8	.3	.5	1.6	.9	17

TABLE 14.38 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT #	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A	L'ENTREE X	A LA SORTIE S	A	L'ENTREE X	A LA SORTIE S	A	L'ENTREE X	A LA SORTIE S
.Le rapport de la charge de l'électron à sa masse	18	.0	.0	.2	.5	.1	.4	.3	.5	8
.Le champ magnétique dû au mouvement d'une charge électrique	63	.1	.3	1.3	.9	.2	.4	1.8	.4	8
.Force agissant sur un conducteur porteur de courant dans un champ magnétique uniforme	63	.1	.3	1.4	.9	.2	.4	1.9	.6	8
.Instruments de mesure électriques-galvanomètres	63	.1	.3	1.5	.9	.3	.7	1.6	1.1	17
.Les moteurs électriques	72	.0	.0	1.6	.8	.3	.5	1.9	.6	8
.F.E.M. dans un conducteur se déplaçant dans un champ magnétique uniforme - loi de Lenz	63	.0	.0	1.4	.8	.1	.4	1.6	.8	8
.Inductance	27	.0	.0	.6	.8	.1	.4	1.1	.9	8
.La génératrice AC	63	.0	.0	1.1	.6	.1	.4	1.4	.7	8
.La génératrice DC	63	.0	.0	1.1	.6	.1	.4	1.4	.7	8
.Les circuits AC	27	.2	.4	.5	.8	.3	.7	1.0	1.2	8
.Les transformateurs	72	.1	.4	1.9	.4	.4	.7	2.3	.5	17
.L'hystérésis	9	.0	.0	.2	.4	.0	.0	.2	.4	0
.Le spectre électromagnétique	27	.1	.4	.6	.5	.3	.8	.7	1.1	8
STRUCTURE DE L'ATOME										
.Le modèle de l'atome selon Thomson	36	.0	.0	1.0	.7	.0	.0	1.0	.8	0
.L'expérience de Rutherford: déviation du faisceau de particules alpha	27	.2	.4	.8	.8	.3	.5	1.0	.8	0
.Le modèle de l'atome selon Rutherford ("système solaire")	54	.3	.5	1.3	.5	.4	.5	1.4	.5	0
.Les propriétés de l'électron	54	.2	.4	1.3	.5	.4	.5	1.6	.5	8
.L'effet photoélectrique (photons)	27	.0	.0	.8	.8	.2	.4	1.0	1.0	8
.L'effet Compton	9	.0	.0	.2	.5	.3	.5	.5	1.0	8
.Dualité particule - onde de la radiation	18	.0	.0	.5	.6	.3	.5	.8	.5	8
.Dualité particule - onde de la matière (de Broglie)	9	.0	.0	.2	.5	.3	.5	.5	.6	8
.Les spectres à raies (évidence historique, les séries de Balmer, etc.)	0	.0	.0	.0	.0	.0	.0	.0	.0	0
.Les niveaux distincts d'énergie d'électrons (expérience de Franck et Hertz)	9	.0	.0	.2	.5	.3	.5	.5	1.0	8
.Les niveaux d'énergie dans l'atome d'hydrogène (modèle selon Bohr)	9	.0	.0	.2	.5	.3	.5	1.8	.5	8

TABLE 14.38 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A X	L'ENTREE S	A LA SORTIE S	A X	L'ENTREE S	A LA SORTIE S	A X	L'ENTREE S	MECONTENTEMENT DE LA PREPARATION
PHYSIQUE NUCLEAIRE										
.La désintégration d'atomes radioactives	27	.0	.0	1.0	.0	.5	.7	1.0	.0	0
.Radiations alpha, beta, gamma: propriétés et spectres	18	.0	.0	1.0	.0	.0	.0	1.0	.0	0
.Dépistage de la radiation	27	.0	.0	1.0	.0	.5	.7	1.0	.0	8
.Structure du noyau	27	.2	.5	1.2	.5	.5	.7	1.0	.0	8
.Propriétés des nucléons	18	.0	.0	1.0	.0	.0	.0	1.0	.0	0
.Les réactions nucléaires - nature générale	27	.0	.0	1.0	.0	.5	.7	1.5	.7	8
.La fission nucléaire	36	.0	.0	1.0	.0	.5	.7	1.0	.0	0
.La fusion nucléaire	36	.0	.0	1.0	.0	.5	.7	1.0	.0	0
.Les dangers de radiation	36	.0	.0	1.0	.0	.5	.7	1.0	.7	3
TEMPERATURE ET CHALEUR										
.Température	36	.8	.8	1.4	.8	.5	.5	1.3	.8	0
a) échelles	36	.7	.8	1.6	.8	.5	.5	1.7	.8	0
b) méthodes de mesure	27	.5	.5	1.0	.9	.5	.5	1.2	1.0	0
.Dilatation thermique	36	.5	.5	1.3	.8	.5	.5	1.7	.5	0
.Chaleur	9	.0	.0	.2	.4	.2	.4	.2	.4	8
a) Théorie cinétique	36	.2	.4	1.0	.9	.5	.5	1.5	.8	17
b) Distribution des vitesses d'après Maxwell	63	.3	.5	1.5	.8	.4	.5	2.0	.0	8
c) Transformation d'énergie mécanique en énergie thermique	63	.4	.5	2.1	.4	.4	.5	2.1	.4	0
d) Chaleur spécifique	18	.6	.9	.6	.9	.4	.5	.6	.9	8
e) Calorimétrie	36	.4	.5	1.4	1.1	.4	.5	1.6	1.1	8
f) Les lois des gaz	13	.0	.0	.4	.5	.2	.4	.6	.5	8
g) Les changements de phases	36	.0	.0	.0	.0	.0	.0	.0	.0	0
h) La tension de vapeur et l'humidité	36	.0	.0	.0	.0	.0	.0	.0	.0	0
.Transfert de chaleur	36	.0	.0	.0	.0	.3	.5	1.3	.5	0
a) Convection	54	.2	.4	1.3	.5	.3	.5	1.7	.8	0
b) Conduction	36	.0	.0	1.2	.5	.3	.5	1.3	.5	0
c) Radiation	9	.0	.0	.3	.6	.3	.6	.3	.6	8
.Thermodynamique	9	.0	.0	.3	.6	.3	.6	.3	.6	8
a) Premier principe	9	.0	.0	.3	.6	.3	.6	.3	.6	8
b) Second principe	0	.0	.0	.0	.0	.0	.0	.0	.0	0
c) Cycle de Carnot	9	1.0	.0	2.0	.0	1.0	.0	2.0	.0	0
PROPRIETES DES SOLIDES, AUTRES QUE THERMIQUES										
.Les propriétés cristallographiques de corps solides simples	9	1.0	.0	2.0	.0	1.0	.0	2.0	.0	0

TABLE 14.38 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A LA SORTIE X	A L'ENTREE S	A LA SORTIE X	S	
.Les propriétés d'élasticité, la loi de Hooke, modules et obéissance sous l'effet des forces	9	.0	.0	2.0	.0	.0	2.0	.0
.Les propriétés électroniques: structure des lisières; conducteurs, semi-conducteurs et isolants	18	.0	.0	1.0	.0	.5	.7	1.0
.Les propriétés électroniques, la diode	9	.0	.0	1.0	.0	.0	.0	1.0
.Les propriétés électroniques, le transistor	9	.0	.0	1.0	.0	.0	.0	1.0
FLUIDES AU REPOS ET EN MOUVEMENT								
.Densité absolue et relative	9	1.0	.0	13.	.6	1.0	.0	2.0
.Pression atmosphérique) le baromètre	9	.5	.7	1.5	.7	1.0	.0	2.0
.Pression hydrostatique - loi de Pascal	18	.0	.0	1.5	.7	.5	.7	2.0
.Le principe d'Archimède - la poussée d'un liquide (flottabilité)	18	.1	1.2	1.6	.6	1.0	1.0	2.0
.Tension superficielle et l'action capillaire	0	.5	.7	.5	.5	.5	.7	1.0
.L'écoulement de fluides, les conditions d'enchaînement	9	.5	.7	1.0	1.4	.5	.7	1.0
.L'écoulement aérodynamique	18	.0	.0	.7	.6	.3	.6	1.0
.Le principe de Bernoulli	36	.0	.0	1.2	.5	.3	.5	1.3
.L'écoulement turbulent	0	.0	.0	.0	.0	.0	.0	.0
.La viscosité	9	.0	.0	.5	.7	.5	.7	1.0
.Loi de Poiseuille	0	.0	.0	.0	.0	.0	.0	.0
THEORIE DE LA RELATIVITE RESTREINTE								
PROPRIETES DE PARTICULES FONDAMENTALES (autres que le proton, le neutron ou l'électron)	0	.0	.0	.0	.0	.0	.0	.0
AUTRES THEMES	0	.0	.0	.0	.0	.0	.0	.0

TABLE 14.39
SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION ^b		
		A X ^a	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	MECONTENTEMENT DE LA PREPARATION ^b
MESURES										
.Les quantités fondamentales de masse, de longueur et de temps	66	1.9	.7	2.9	.7	2.0	.8	3.1	.8	8
.Les erreurs	58	1.0	.8	2.0	1.0	1.6	1.0	2.9	.9	50
.Exactitude et précision (chiffres significatifs, arrondissement des nombres)	75	1.3	.6	2.6	1.0	1.7	.5	2.9	.8	33
.S.I.U.	67	1.5	.8	2.5	.7	1.6	.9	2.6	.7	8
.Analyse dimensionnelle pour développer des relations entre des quantités physiques	92	1.3	.5	2.4	1.0	1.8	1.0	3.0	1.0	33
.Consistance des dimensions dans les équations reliant des quantités physiques	66	1.4	.6	2.6	.6	1.8	.7	2.9	.8	17
FONCTIONS										
Etant donné un tableau de données expérimentales:										
.Dresser un graphique bien étiqueté pour représenter les données	92	1.9	.8	2.9	.8	2.1	.8	3.1	.6	25
.Ecrire l'équation d'une relation linéaire	83	1.6	.8	2.9	.8	1.9	.9	3.3	.7	42
.Dresser un nouveau graphique d'une relation non-linéaire afin d'obtenir une droite, et en établir la relation	100	1.0	1.0	2.6	.9	1.5	1.3	3.1	.7	42
.Dresser un graphique d'une relation genre puissance sur papier logarithmique double, puis en écrire la relation	50	.8	.8	2.0	1.4	1.7	1.2	2.3	1.2	42
.Dresser un graphique d'une relation exponentielle sur papier semi-logarithmique, puis en écrire la relation	33	.6	1.0	1.2	1.1	1.3	1.2	2.2	.8	33
MOUVEMENT										
(cinématique)										
.Mouvement avec accélération uniforme en une, deux ou trois dimensions	100	1.6	.8	3.2	.6	2.0	.9	3.4	.5	42
.Cinématique rectiligne avec accélération uniforme	100	.8	.8	3.2	.6	2.2	.6	3.6	.5	50

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de zéro (aucune connaissance) à 4 (poussée). Voyez le questionnaire de physique, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 14.39 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S	
.Cinématique rectiligne avec accélération variable	83	.8	.8	2.2 1.0	1.1 1.3	2.9 1.2		25
.Cinématique bidimensionnelle avec accélération uniforme (e.g. le mouvement de projectiles)	100	.4	.6	2.6 .8	1.2 .9	3.4 .5		50
.Cinématique bidimensionnelle avec accélération variable (e.g. le mouvement circulaire)	100	.3	.6	2.6 .5	1.3 1.2	3.4 .5		67
.Cinématique en trois dimensions avec accélération uniforme	50	.2	.6	1.2 .8	.8 1.0	2.3 1.2		17
.Cinématique en trois dimensions avec accélération variable	25	.3	.9	1.0 .8	1.0 1.4	1.8 1.6		17
PRINCIPES DU MOUVEMENT DE NEWTON-DYNAMIQUE PARTICULAIRE								
.La première loi de Newton, masse et inertie	92	1.8 .8	3.2 .7	2.3 .8	3.4 .5			42
.La seconde loi de Newton	100	1.6 .5	3.0 .6	2.1 .6	3.5 .5			42
.La troisième loi de Newton	92	1.4 .5	2.6 .8	1.9 .6	3.3 .7			42
.La résolution et la somme des forces au moyen de dessins à l'échelle	92	1.3 .6	2.8 .8	1.7 .8	3.3 .6			33
.La résolution et la somme des forces par méthodes analytiques	83	.9 .6	2.6 .5	1.6 .9	3.2 .4			42
.Les cadres de référence	100	.4 .6	2.0 .8	.9 .8	2.8 1.0			42
.Les forces fictives	92	.1 .2	2.2 .9	.8 1.0	2.7 .9			33
.La dynamique du mouvement circulaire	92	.2 .4	2.5 .6	1.0 1.1	3.4 .5			42
STATIQUES								
.Les moments	17	.2 .4	1.2 1.6	.8 1.5	1.8 2.1			8
.Lois de l'équilibre	42	.5 .5	2.2 1.2	1.0 1.2	2.4 1.5			17
.Machines simples, levier, plan incliné, poulies	0	.8 1.5	.8 1.5	1.0 1.7	1.0 1.7			0
PRINCIPES DU MOUVEMENT DE NEWTON-DYNAMIQUE DE CORPS RIGIDES								
.Le mouvement de translation	50	.7 .8	2.2 1.4	1.2 1.3	2.4 1.1			17
.Le mouvement de rotation, la torsion, le moment d'inertie, l'accélération angulaire	17	.6 .9	.8 1.2	1.0 1.2	2.0 1.2			17
.Le mouvement composé de translation et de rotation	8	1.0 1.0	.8 1.3	1.3 1.3	1.5 1.3			17
.Le frottement	58	.6 .5	1.8 1.1	1.0 1.1	2.8 .9			25

TABLE 14.39 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L' s	A LA SORTIE X s	A X	L' s	A LA SORTIE X s	
FORCE GRAVITATIONNELLE PRES DE LA SURFACE TERRESTRE								
.Distinction entre force gravitationnelle et masse inerte; principe d'équivalence	83	.9	.7	2.3 1.1	1.4 1.1	2.5 1.1		25
.Le poids et l'accélération gravitationnelle	92	1.5	.9	3.1 .8	1.6 1.0	3.3 .5		8
.La dynamique du mouvement de projectiles (dans le vide)	100	.3	.5	2.8 .9	.9	3.2 .7		33
.La dynamique du mouvement de projectiles (avec resistance d l'air)	67	.4	.5	1.8 1.0	.7	1.9 1.3		25
.Dependance de g sur la distance séparant le corps du centre de la terre et sur la latitude	100	.8	.8	2.2 1.1	1.0 .9	2.9 1.1		17
GRAVITATION UNIVERSELLE								
.Ptolémée, Copernicus, Kepler	75	.3	.5	1.6 1.0	.5	1.8 1.3		25
.Les lois de Kepler	83	.1	.3	1.9 .9	.4	2.0 1.0		25
.La loi de la gravitation universelle	100	1.1	.6	2.8 .8	1.3 .7	3.0 .7		25
.Les orbites circulaires	92	.3	.5	2.4 .8	.6	2.8 1.0		25
.Le mouvement d'un corps sous l'influence d'une force centrale	83	.3	.5	2.4 1.0	.7	2.6 1.3		25
QUANTITE DE MOUVEMENT								
.Impulsion et quantité de mouvement	100	.1	.3	2.5 .7	.4	3.1 .6		17
.La conservation de la quantité de mouvement en ligne droite	100	.1	.3	2.7 .8	.6	3.0 .9		25
.Les collisions élastiques (en une seule dimension)	100	.1	.3	2.4 .8	.4	3.0 .7		25
.Les collisions inélastiques (en une seule dimension)	100	.1	.3	2.2 .7	.4	2.4 .9		25
.Les collisions de mobiles en deux dimensions	100	.1	.3	2.3 .6	.3	2.7 .7		17
.La quantité de mouvement angulaire	33	.0	.0	1.1 1.3	.2	2.0 1.4		8
.La conservation de la quantité de mouvement angulaire	25	.0	.0	1.8 1.5	.2	2.0 1.6		8
.Précéssion (mouvement rétrograde)	25	.0	.0	.8 1.2	.4	1.6 1.5		17
TRAVAIL, ENERGIE, PUISSANCE								
.Travail accompli par une force constante	100	1.6	.8	3.0 .6	1.8 .6	3.4 .5		8
.Travail accompli par une force variable (e.g., F = kx)	100	.6	.9	2.2 1.9	.8 1.0	2.9 .9		8
.Travail accompli par une force variable (e.g., EX 1/x ²)	92	.5	.5	2.4 .7	.8	2.7 .8		17

TABLE 14.39 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L' S	A LA SORTIE X S	A X	L' S	A LA SORTIE X S	
.Travail accompli dans la compression d'un gaz	17	.0	.0	1.0 1.4	.3	.6	1.3 1.5	8
.l'énergie cinétique; la relation entre l'énergie cinétique et le travail mécanique	100	1.2	1.0	2.9 .6	1.8	.8	3.2 .4	17
.l'énergie potentielle où la force est constante (e.g., mgh)	100	1.3	1.1	3.1 .6	1.7	.8	3.4 .5	17
.l'énergie potentielle où la force est variable (e.g., kx ou $Gm_1 m_2$)	100	.2	.4	2.1 .8	.5	.5	2.9 .9	17
.Conservation de l'énergie mécanique (transformations d'énergies cinétique et potentielle)	100	1.0	.7	2.8 .5	1.4	.7	3.1 .6	17
.Puissance	58	1.2	.6	2.3 .7	1.4	.5	2.5 .8	8
.Efficacité du travail	25	1.3	1.1	2.2 1.1	.8	.8	1.7 1.2	0
OSCILLATIONS ET ONDES	75	1.3	1.2	2.3 .9	1.5	1.3	3.0 .8	8
.Les oscillations	25	.2	.4	1.2 1.2	.0	.0	1.7 1.2	0
.Description cinématique du mouvement harmonique simple, ($y = A \sin \omega t$ ou cercle de référence)	50	.0	.0	1.6 1.1	.1	.4	2.1 1.0	8
.Le mouvement d'une particule sous l'influence d'une force harmonique ($F = -kx$)	42	.2	.4	1.6 1.3	.3	.5	2.3 1.3	8
.Solutions de l'équation du mouvement pour un système oscillateur (seconde loi de Newton)	75	.2	.4	1.9 .9	.3	.5	2.6 .7	8
.Une masse accrochée à un ressort	58	.6	.5	2.0 .8	1.0	.8	2.7 .8	25
.Le pendule simple (où l'angle d'écartement de la verticale est faible, permettant les approximations d'usage)	33	.1	.4	1.3 1.4	.5	.8	2.0 1.4	17
.Le pendule rigide (ou l'angle d'écartement est faible)	17	.2	.4	1.0 .8	.0	.0	1.3 1.2	0
.Les oscillations de torsion	33	.8	1.0	1.8 1.5	.6	.9	2.2 1.5	0
.La conservation de l'énergie dans les oscillations libres	17	.0	.0	.8 1.0	.5	.7	1.0 1.4	8
.Taux exponentiel de la décroissance des oscillations	8	.0	.0	.7 1.0	.5	.7	1.5 2.1	8
.Dérivation de l'équation différentielle exprimant la propagation des ondes à compression dans un gaz ou des ondes transversales dans un fil)								

TABLE 14.39 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A X	L' S	A LA X	A X	L' S	A LA X	A X	L' S	DE LA X
Relation entre fréquence, longueur d'onde et vitesse de propagation ($v = f\lambda$)	83	1.6	.8	2.6	.8	2.0	.9	3.1	.8	33
Ondes se propageant en une seule dimension	75	1.1	.9	2.4	.8	1.6	1.0	2.9	.6	33
Ondes se propageant en deux dimensions	75	1.0	.9	2.4	.9	1.7	1.1	2.9	.7	33
La polarisation	42	.4	.5	1.1	.7	.6	.5	1.4	1.1	8
L'effet Doppler	33	.5	.5	1.1	.4	1.1	.7	2.1	1.1	25
Ondes de choc	8	.0	.0	.3	.5	.0	.0	.3	.6	0
L'énergie transportée par une onde unidimensionnelle	42	.6	.6	1.5	.7	.9	.8	2.1	1.1	25
L'intensité relative et absolue des ondes sonores (décibels)	17	.0	.0	.5	.6	.7	.6	1.3	1.2	17
L'énergie émise par une source ponctuelle de radiation (la loi de l'inverse du carré de la distance)	75	.4	.8	.4	.8	.9	.8	2.8	1.1	42
COMPORTMENT DE LA LUMIERE										
Discussion qualitative des sources lumineuses	58	1.3	.7	2.3	.9	1.4	.7	2.5	1.2	0
Propagation rectiligne des ondes lumineuses	58	1.5	.9	2.4	1.0	1.8	1.0	2.6	1.2	8
Le concept de l'onde frontale	58	.8	.7	2.0	.8	.8	.4	2.2	.8	17
Le principe de Huygens	42	.3	.5	1.6	1.1	.7	.5	2.2	1.3	17
La réflexion des ondes par une surface plane	58	1.6	1.1	2.7	1.0	1.6	1.2	2.8	1.2	0
La réflexion des ondes par une surface sphérique	58	1.3	.8	2.2	.9	1.4	.9	2.5	.9	0
Miroirs convexes et concaves	50	1.6	.9	2.6	1.1	1.7	1.1	3.0	1.2	0
a) dessins à l'échelle	50	1.1	.9	2.4	1.2	1.1	.9	3.0	1.2	8
b) traitement analytique										
La réfraction des ondes par une surface plane séparant deux milieux	67	1.2	.8	2.6	1.0	1.3	.9	2.9	1.1	0
Le concept de l'indice de réfraction (loi de Snell-Descartes)	67	1.1	1.0	2.8	.9	1.2	1.0	3.1	1.1	0
La réflexion totale interne	67	1.1	.7	2.4	.8	1.3	.9	2.7	.9	8
La réfraction dans un prisme	58	1.2	.8	2.4	.8	1.2	.7	2.7	1.1	0
La spectromètre à prisme-deviation minimale	42	.3	.5	1.4	.9	.7	.8	2.0	1.4	17
La puissance de dispersion d'un milieu	33	.5	.5	1.6	1.2	1.2	.8	2.0	1.6	25

TABLE 14.39 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION	
		A	X	S	A LA SORTIE X S	A	X	S	A LA SORTIE X S		
.La réfraction à une surface sphérique séparant deux milieux	33	.4	.5	1.0	.8	.5	.5	1.0	.9	8	
.L'équation d'oculiste pour les lentilles	42	.2	.5	1.5	.9	.7	.8	2.4	1.5	25	
.L'équation des lentilles minces	50	.7	1.0	2.2	1.3	1.0	.8	2.7	1.0	17	
.La formation des images par les lentilles a) dessins à l'échelle b) traitement analytique	58	1.3	1.0	2.7	1.1	1.6	1.3	2.9	1.1	8	
.La puissance d'une lentille	58	.8	.8	2.4	1.3	1.1	.9	2.8	1.0	17	
.L'aberration chromatique	17	.5	.5	1.2	1.2	.8	.8	1.8	1.5	17	
.Les aberrations monochromatiques	50	.4	.5	1.2	.6	.5	.5	1.5	.9	8	
.L'oeil et la caméra	33	.5	.5	1.0	1.1	.4	.5	1.1	1.1	8	
.Les défauts de l'oeil et les lentilles correctives	33	.2	.5	1.5	1.1	1.1	.7	2.0	.8	0	
.Les microscopes simple et composé	25	.6	.7	1.7	1.0	1.0	.8	1.7	1.0	0	
.Le télescope	25	.4	.5	1.0	.6	.3	.5	1.2	.8	0	
	42	.4	.5	1.4	.5	.5	.8	1.7	.5	8	
INTERFERENCE ET DIFFRACTION											
.Superposition d'impulsions et/ou d'ondes	67	1.0	.8	1.8	1.1	1.1	.8	2.5	.9	0	
.Réflexion et transmission d'impulsions et d'ondes à la frontière de deux milieux	75	.9	.8	2.2	1.0	1.1	.8	2.8	.9	8	
.Ondes stationnaires sur un fil, les extrémités étant fixes	50	.9	.7	1.8	1.3	1.3	.8	2.4	1.5	8	
.Ondes stationnaires dans une colonne à bouts ouverts	8	.6	.5	.7	.5	.8	.5	1.3	1.3	0	
.Ondes stationnaires dans une colonne dont un bout est fermé, l'autre ouvert	0	.7	.5	.8	.4	.8	.5	1.3	1.3	0	
.Interférence d'ondes périodiques, deux sources ponctuelles dans un milieu bidimensionnel	75	1.0	.8	2.8	1.2	1.3	.7	3.0	.8	8	
.Les effets d'interférence au moyen de fentes doubles (l'expérience de Young)	91	.6	.7	2.5	.5	.9	.6	2.9	.6	25	
.Les effets d'interférence au moyen de fentes multiples	83	.3	.5	1.9	.7	.9	.6	2.4	.9	33	
.La diffraction de Fraunhofer au moyen d'une arête droite	33	.3	.5	1.4	1.3	.8	.4	2.4	.9	17	
.La diffraction de Fraunhofer au moyen d'une fente simple (interférence due à une fente simple)	42	.2	.4	1.4	1.2	.8	.5	2.5	.9	33	

TABLE 14.39 (Cont'd)
SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A L'ENTREE X	A LA SORTIE S	A L'ENTREE X	A LA SORTIE S	A L'ENTREE X	A LA SORTIE S	
.La diffraction de Fraunhofer au moyen d'un orifice circulaire	33	.0	.0	1.2	1.2	1.0	.8	25
.La diffraction de Fraunhofer au moyen d'une grille optique	33	.1	.4	1.0	1.0	.6	.9	8
.Le critere de resolution de Rayleigh	25	.2	.4	.8	.8	.3	.5	0
.Puissance de resolution d'une grille a diffraction	17	.0	.0	.8	1.0	.0	.0	0
.Le spectrometre a grille a diffraction	42	.0	.0	1.0	.6	.0	.0	0
.La diffraction de Fresnel	17	.2	.4	1.2	1.3	.3	.5	0
.Les effets d'interference dans les pellicules minces paralleles	67	.1	.3	2.1	.6	.4	.5	17
.L'interferometre de Michelson	42	.6	.4	1.5	.8	.4	.5	8
.Les effets d'interference dans les pellicules minces non paralleles	58	.0	.0	1.6	1.1	.0	.0	0
ELECTRICITE ET MAGNETISME								
.L'electrostatique	50	1.3	.5	2.3	1.2	1.5	.8	8
.La force electrique (loi de Coulomb)	92	.6	.8	2.6	.7	.6	.7	0
.Le champ electrique	75	.5	.5	2.3	.9	.6	.5	0
.Energie potentielle electrique	83	.4	.5	2.4	.7	.9	.6	8
.Différence de potentiel electrique - le volt	83	.8	.9	2.4	.5	1.3	.7	8
.Les sources de force electromotrice	50	.9	.7	1.6	.8	1.0	.8	17
.L'experience de Millikan	83	.1	.3	1.7	1.0	.4	.5	17
.Le mouvement d'une charge electrique - l'ampere	58	1.1	.6	2.1	.9	1.1	.7	8
.La loi d'Ohm - resistance constante	50	1.2	1.0	2.2	1.1	1.3	.8	8
.La resistance d'un conducteur	50	.9	.8	2.1	1.1	1.0	.8	17
.Les circuits a courant continu	50	.8	1.0	2.4	.7	1.3	.8	0
.Les lois de Kirchhoff	25	1.0	1.0	2.0	1.3	1.5	1.0	8
.La capacite electrique	25	1.2	.8	2.0	.6	1.3	1.0	8
.Les proprietes de dielectriques	25	.1	.4	1.0	.8	.2	.4	0

TABLE 14.39 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION %
		A L'ENTREE		A LA SORTIE		A L'ENTREE		A LA SORTIE		
		X	S	X	S	X	S	X	S	
.Les facteurs de transformations dans les circuits redressés	17	.5	.6	1.0	.8	.3	.6	1.7	1.5	0
.La puissance électrique dans les circuits à courant continu (DC)	42	1.2	1.0	2.2	.9	1.3	.8	2.5	.8	8
.Le magnétisme	50	1.0	1.1	1.8	1.0	1.2	.8	2.5	1.0	17
.Le champ magnétique	50	1.0	.9	1.8	.8	1.2	.8	2.7	1.0	8
.La force agissant sur une charge électrique se déplaçant dans un champ magnétique	50	.7	.7	1.8	.7	1.0	.8	2.7	.5	8
.Le rapport de la charge de l'électron à sa masse	75	.1	.3	1.6	.7	.3	.5	2.1	.7	17
.Le champ magnétique dû au mouvement d'une charge électrique	42	.4	.5	1.7	1.0	.8	.8	2.5	.8	25
.Force agissant sur un conducteur porteur de courant dans un champ magnétique uniforme	50	.5	.5	1.9	.8	1.0	.6	2.3	.8	33
.Instruments de mesure électriques-galvanomètres	42	.6	.5	1.6	.8	1.0	.6	2.0	.6	25
.Les moteurs électriques	25	.8	.9	1.7	1.1	1.3	.8	1.8	1.2	25
.F.E.M. dans un conducteur se déplaçant dans un champ magnétique uniforme - loi de Lenz	33	.6	.5	1.6	.8	.8	.8	1.8	.8	17
.Inductance	25	.2	.5	1.0	.0	.4	.5	1.8	.4	8
.La génératrice AC	25	.8	1.0	1.5	.5	1.2	.4	2.0	.7	25
.La génératrice DC	33	.7	.8	1.6	.8	1.3	.5	2.2	.8	33
.Les circuits AC	25	.2	.5	1.4	.5	1.0	.0	2.3	1.0	25
.Les transformateurs	17	1.0	1.0	1.5	.8	1.2	.8	1.7	1.0	17
.L'hystérésis	0	.0	.0	.0	.0	.0	.0	1.0	1.0	0
.Le spectre électromagnétique	58	.6	.7	1.8	1.1	.7	.8	1.7	1.1	17
STRUCTURE DE L'ATOME										
.Le modèle de l'atome selon Thomson	25	.5	.5	1.5	1.4	.8	1.0	1.0	1.4	8
.L'expérience de Rutherford: déviation du faisceau de particules alpha	42	.4	.5	1.7	1.2	.8	.8	1.6	1.5	17
.Le modèle de l'atome selon Rutherford (Système solaire")	33	.8	.8	2.0	1.3	.8	.5	1.5	1.3	8
.Les propriétés de l'électron	50	.7	.8	2.1	1.1	1.0	.7	2.0	1.2	17
.L'effet photoélectrique (photons)	50	.4	.5	2.0	1.0	.5	.6	2.0	1.4	0

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

[illegible]

TABLE 14.39 (Cont'd)

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A	X	S	A	X	S	
.Transfert de chaleur	0	.0	.0	.0	.0	.0	.0	0
a) Convection	0	.0	.0	.0	.0	.0	.0	0
b) Conduction	0	.0	.0	.0	.0	.0	.0	0
c) Radiation	0	.0	.0	.0	.0	.0	.0	0
.Thermodynamique	0	.0	.0	.0	.0	.0	.0	0
a) Premier principe	0	.0	.0	.0	.0	.0	.0	0
b) Second principe	0	.0	.0	.0	.0	.0	.0	0
c) Cycle de Carnot	0	.0	.0	.0	.0	.0	.0	0
PROPRIETES DES SOLIDES, AUTRES QUE THERMIQUES	0	.0	.0	.0	.0	.0	.0	0
.Les propriétés cristallographiques de corps solides simples	8	.0	.0	2.0	.0	1.0	.0	8
.Les propriétés d'élasticité, la loi de Hooke, modules et obéissance sous l'effet des forces	8	.0	.0	2.0	.0	1.0	.0	0
.Les propriétés électroniques: structure des lisières; conducteurs, semi-conducteurs et isolants	8	.0	.0	2.0	.0	1.0	.0	8
.Les propriétés électroniques, la diode	0	.0	.0	.0	.0	.0	.0	0
.Les propriétés électroniques, le transistor	0	.0	.0	.0	.0	.0	.0	0
FLUIDES AU REPOS ET EN MOUVEMENT	0	.0	.0	.0	.0	.0	.0	0
.Densité absolue et relative	0	.0	.0	.0	.0	.0	.0	0
.Pression atmosphérique - le baromètre	0	.0	.0	.0	.0	.0	.0	0
.Pression hydrostatique - loi de Pascal	0	.0	.0	.0	.0	.0	.0	0
.Le principe d'Archimède - la poussée d'un liquide (flottabilité)	0	.0	.0	.0	.0	.0	.0	0
.Tension superficielle et l'action capillaire	0	.0	.0	.0	.0	.0	.0	0
.L'écoulement de fluides, les conditions d'enchaînement	0	.0	.0	.0	.0	.0	.0	0
.L'écoulement aérodynamique	0	.0	.0	.0	.0	.0	.0	0
.Le principe de Bernoulli	0	.0	.0	.0	.0	.0	.0	0
.L'écoulement turbulent	0	.0	.0	.0	.0	.0	.0	0
.La viscosité	0	.0	.0	.0	.0	.0	.0	0
.Loi de Poiseuille	0	.0	.0	.0	.0	.0	.0	0
THEORIE DE LA RELATIVITE RESTREINTE	8	.0	.0	1.0	.0	.0	1.0	0
PROPRIETES DE PARTICULES FONDAMENTALES	0	.0	.0	.0	.0	.0	.0	0
. (autres que le proton, le neutron ou l'électron)	0	.0	.0	.0	.0	.0	.0	0
AUTRES THEMES	0	.0	.0	.0	1.0	1.4	3.5	.7

TABLE 14.40

SECONDARY SCHOOL PHYSIQUE YEAR 3 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI VOUS VOUS ATTENDEZ A CE QUE
VOS ETUDIANTS POSSEDENT CHAQUE HABILITE
ET SI VOS ATTENTES SONT COMBLEES"

	0 ¹		1 ¹		2 ¹		TOTAL
	N	%	N	%	N	%	
Habilité d'utiliser les concepts de rapports et proportions	-	-	8	89	1	11	9
Habilité d'utiliser les logarithmes	9	100	-	-	-	-	9
Habilité d'utiliser des fonctions exponentielles	9	100	-	-	-	-	9
Habilité de convertir les degrés en radians	9	100	-	-	-	-	9
Habilité d'utiliser des fonctions trigonométriques	6	67	3	33	-	-	9
Habilité d'utiliser des identités trigonométriques	8	89	1	11	-	-	9
Habilité de manipuler des équations linéaires	1	11	5	56	3	33	9
Habilité de résoudre un système d'équations linéaires simultanées	4	44	4	44	1	12	9
Habilité d'extraire les racines d'une équation quadratique	7	78	1	11	1	11	9
Habilité d'obtenir la dérivée de fonctions simples	3	89	1	11	-	-	9
Habilité d'intégrer des fonctions différentielles simples	9	100	-	-	-	-	9
Habilité de manipuler les vecteurs	7	78	2	22	-	-	9
Habilité de travailler avec facilité en algèbre vectorielle	8	89	1	11	-	-	9
Habilité d'appliquer l'expansion binominale	9	100	-	-	-	-	9

¹ ECHELLE DE CODIFICATION: 0 - Je ne m'attends pas à ce que les étudiants possèdent cette habileté.

1 - Les étudiants devraient normalement posséder cette habileté, mais la plupart d'entre eux ne la possèdent pas

2 - Les étudiants devraient posséder cette habileté, et, en effet, la plupart d'entre eux la possèdent

TABLE 14.41

SECONDARY SCHOOL PHYSIQUE YEAR 3 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI VOUS VOUS ATTENDEZ A CE QUE
VOS ETUDIANTS POSSEDENT CHAQUE HABILETE
ET SI VOS ATTENTES SONT COMBLEES"

	0 ¹		1 ¹		2 ¹		TOTAL
	N	%	N	%	N	%	
Habilité d'utiliser les concepts de rapports et proportions	1	9	4	36	6	55	11
Habilité d'utiliser les logarithmes	9	82	2	18	-	-	11
Habilité d'utiliser des fonctions exponentielles	9	82	2	18	-	-	11
Habilité de convertir les degrés en radians	10	91	1	9	-	-	11
Habilité d'utiliser des fonctions trigonométriques	5	45	6	55	-	-	11
Habilité d'utiliser des identités trigonométriques	7	64	4	36	-	-	11
Habilité de manipuler des équations linéaires	-	-	8	73	3	27	11
Habilité de résoudre un système d'équations linéaires simultanées	7	70	2	20	1	10	10
Habilité d'extraire les racines d'une équation quadratique	6	55	3	27	2	18	11
Habilité d'obtenir la dérivée de fonctions simples	9	90	1	10	-	-	10
Habilité d'intégrer des fonctions différentielles simples	10	100	-	-	-	-	10
Habilité de manipuler les vecteurs	4	36	5	46	2	18	11
Habilité de travailler avec facilité en algèbre vectorielle	7	64	4	36	-	-	11
Habilité d'appliquer l'expansion binominale	10	100	-	-	-	-	10

¹ ECHELLE DE CODIFICATION: 0 - Je ne m'attends pas à ce que les étudiants possèdent cette habileté

1 - Les étudiants devraient normalement posséder cette habileté, mais la plupart d'entre eux ne la possèdent pas

2 - Les étudiants devraient posséder cette habileté, et, en effet, la plupart d'entre eux la possèdent

TABLE 14.42

SECONDARY SCHOOL PHYSIQUE YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI VOUS VOUS ATTENDEZ A CE QUE
VOS ETUDIANTS POSSEDENT CHAQUE HABILETE
ET SI VOS ATTENTES SONT COMBLEES"

	0 ¹		1 ¹		2 ¹		TOTAL
	N	%	N	%	N	%	
Habilité d'utiliser les concepts de rapports et proportions	-	-	6	50	6	50	12
Habilité d'utiliser les logarithmes	3	25	8	67	1	8	12
Habilité d'utiliser des fonctions exponentielles	6	50	5	42	1	8	12
Habilité de convertir les degrés en radians	6	55	3	27	2	18	11
Habilité d'utiliser des fonctions trigonométriques	-	-	5	42	7	58	12
Habilité d'utiliser des identités trigonométriques	4	33	6	50	2	17	12
Habilité de manipuler des équations linéaires	-	-	2	17	10	83	12
Habilité de résoudre un système d'équations linéaires simultanées	-	-	8	67	4	33	12
Habilité d'extraire les racines d'une équation quadratique	-	-	5	45	6	55	11
Habilité d'obtenir la dérivée de fonctions simples	3	25	6	50	3	25	12
Habilité d'intégrer des fonctions différentielles simples	5	45	5	45	1	10	11
Habilité de manipuler les vecteurs	-	-	9	82	2	18	11
Habilité de travailler avec facilité en algèbre vectorielle	3	27	7	64	1	9	11
Habilité d'appliquer l'expansion binominale	10	91	1	9	-	-	11

¹ ECHELLE DE CODIFICATION: 0 - Je ne m'attends pas à ce que les étudiants possèdent cette habileté

1 - Les étudiants devraient normalement posséder cette habileté, mais la plupart d'entre eux ne la possèdent pas

2 - Les étudiants devraient posséder cette habileté, et, en effet, la plupart d'entre eux la possèdent

TABLE 15.1
SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																				TOTAL	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20+
Secondary school teaching	0	3	3	2	2	5	3	1	3	4	4	4	2	3	2	2	0	0	1	1	4	49
Teaching this course (or its equivalent)	1	12	8	7	8	4	2	2	0	1	4	0	0	0	0	0	0	0	0	0	1	50
Related professional (non-teaching) experience	40	1	3	0	1	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	1	50

TABLE 15.2
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 4 GENERAL	
	N	%
No	38	76
Elementary	7	14
Community college	0	0
University	1	2
Other	4	8
More than one other	0	0
Total	50	100

TABLE 15.3
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																				TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+
Secondary school teaching	0	2	4	4	4	4	3	6	2	2	5	0	5	0	0	2	0	1	0	1	49
Teaching this course (or its equivalent)	0	7	15	6	3	5	2	1	4	1	2	0	2	0	0	0	0	0	0	0	49
Related professional (non-teaching) Experience	35	2	2	3	3	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	49

TABLE 15.4
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 4 ADVANCED	
	N	%
No	37	76
Elementary	7	14
Community college	0	0
University	3	6
Other	2	4
More than one other	0	0
Total	49	100

TABLE 15.5
SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS & FUNCTIONS
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																				TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+
Secondary school teaching	0	0	0	4	4	2	4	4	5	1	1	0	3	4	2	1	3	2	0	1	8
Teaching this course (or its equivalent)	0	10	9	8	0	4	2	3	2	2	1	1	2	0	1	1	1	0	0	0	2
Related professional (non-teaching) Experience	34	6	2	0	0	1	0	0	1	1	1	0	1	0	1	1	0	0	0	0	0

TABLE 15.6
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 5 REL & FUNCT	
	N	%
No	37	78
Elementary	3	6
Community college	3	6
University	2	4
Other	2	4
More than one other	1	2
Total	48	100

TABLE 15.7
SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+ TOTAL	
Secondary school teaching	0	0	1	3	0	3	5	3	2	3	2	4	5	0	1	3	1	3	0	2	10	51
Teaching this course (or its equivalent)	0	7	3	5	8	5	6	3	7	3	3	0	0	0	1	0	0	0	0	0	0	51
Related professional (non-teaching) experience	32	3	2	5	1	4	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	51

TABLE 15.8
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 5 CALCULUS	
	N	%
No	40	80
Elementary	4	8
Community college	1	2
University	1	2
Other	2	4
More than one other	2	4
Total	50	100

TABLE 15.9
SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																				TOTAL	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20+
Secondary school teaching	0	0	0	1	0	2	2	1	10	1	0	4	5	6	3	3	0	1	1	1	9	50
Teaching this course (or its equivalent)	0	5	7	8	7	2	3	3	2	3	5	0	1	0	0	1	0	1	0	0	2	50
Related professional (non-teaching) experience	34	4	1	1	4	1	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	50

TABLE 15.10
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 5 ALGEBRA	
	N	%
No	36	72
Elementary	4	8
Community college	1	2
University	4	8
Other	3	6
More than one other	2	4
Total	50	100

TABLE 15.11
SECONDARY SCHOOL MATHEMATICS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Doctorate	0	0	0	0
Master's	5	10	3	6
Honour Bachelor's (4 year)	25	51	24	49
Bachelor's	19	39	19	39
Post-Secondary Diploma	0	0	1	2
Other	0	0	2	4
Total	49	100	49	100

TABLE 15.12
SECONDARY SCHOOL MATHEMATICS
OSSTF/AEFO CERTIFICATION CATEGORY

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Category 1/A1	2	4	1	2
Category 2/A2	15	30	8	16
Category 3/A3	5	10	7	15
Category 4/A4	28	56	33	67
Total	50	100	49	100

TABLE 15.13
SECONDARY SCHOOL MATHEMATICS
TEACHERS' POSITION IN SCHOOL

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Principal	0	0	0	0
Vice-principal	0	0	1	2
Department Head	6	12	4	9
Assistant or Associate Head	6	12	4	9
Teacher	37	76	38	80
Other	0	0	0	0
Total	49	100	47	100

TABLE 15.14
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Yes, it is my area	36	72	45	92
Yes, it is closely related	10	20	4	8
No	4	8	0	0
Total	50	100	49	100

TABLE 15.15
SECONDARY SCHOOL MATHEMATICS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Doctorate	0	0	0	0	1	2
Master's	6	12	9	18	15	30
Honour Bachelor's (4 year)	26	53	29	58	20	40
Bachelor's	17	35	12	24	11	22
Post-Secondary Diploma	0	0	0	0	0	0
Other	0	0	0	0	3	6
Total	49	100	50	100	50	100

TABLE 15.16
SECONDARY SCHOOL MATHEMATICS
OSSTF/AEFO CERTIFICATION CATEGORY

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Category 1/A1	1	2	0	0	1	2
Category 2/A2	4	8	4	8	2	4
Category 3/A3	6	12	5	10	4	8
Category 4/A4	38	78	42	82	43	86
Total	49	100	51	100	50	100

TABLE 15.17
SECONDARY SCHOOL MATHEMATICS
TEACHERS' POSITION IN SCHOOL

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Principal	0	0	0	0	0	0
Vice-principal	0	0	0	0	0	0
Department Head	11	22	15	29	16	32
Assistant or Associate Head	9	19	12	24	14	28
Teacher	29	59	24	47	20	40
Other	0	0	0	0	0	0
Total	49	100	51	100	50	100

TABLE 15.18
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Yes, it is my area	40	82	43	84	41	82
Yes, it is closely related	8	16	7	14	8	16
No	1	2	1	2	1	2
Total	49	100	51	100	50	100

TABLE 15.19

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	9	18	28	56	11	22	2	4	50
Knowledge of subject of incoming students	20	40	18	36	6	12	6	12	50
Relationship between this course and others taken concurrently	3	6	11	22	13	27	22	45	49
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	10	20	15	31	14	29	10	20	49
Ontario Ministry of Education guidelines	12	24	17	35	5	10	15	31	49
Course outline assigned to you	28	58	7	15	6	12	7	15	48
Special interests or training you might have	7	14	12	24	19	38	12	24	50
Content and approach of principal text(s)	14	28	14	28	12	24	10	20	50
Staffing	2	5	4	10	3	7	32	78	41
Other	2	5	1	3	--	--	35	92	38

TABLE 15.20
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	3	6	18	37	19	39	9	18	49
Knowledge of subject of incoming students	20	42	20	42	4	8	4	8	48
Relationship between this course and others taken concurrently	6	14	8	19	16	38	12	29	42
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	7	15	18	38	17	35	6	12	48
Ontario Ministry of Education guidelines	29	59	13	27	2	4	5	10	49
Course outline assigned to you	34	69	5	10	3	6	7	14	49
Special interests or training you might have	7	14	21	43	13	27	8	16	49
Content and approach of principal text(s)	21	43	14	29	10	20	4	8	49
Staffing	1	3	2	6	4	12	26	79	33
Other	1	3	3	8	-	-	34	89	38

TABLE 15.21
SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS AND FUNCTIONS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent			Moderate Extent			Small Extent			Not At All			TOTAL
	N	%		N	%		N	%		N	%		
Interests of students	3	6	26	53	16	33	4	8	49				
Knowledge of subject of incoming students	25	51	15	31	7	14	2	4	49				
Relationship between this course and others taken concurrently	9	18	21	43	15	31	4	8	49				
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	9	18	17	35	14	29	9	18	49				
Ontario Ministry of Education guidelines	25	51	10	21	9	18	5	10	49				
Course outline assigned to you	27	60	7	16	5	11	6	13	45				
Special interests or training you might have	11	22	19	39	14	29	5	10	49				
Content and approach of principal text(s)	17	35	15	31	12	24	5	10	49				
Staffing	3	8	3	8	3	8	28	76	37				
Other	-	-	-	-	1	3	37	97	38				

TABLE 15.22

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent N	%	Moderate Extent N	%	Small Extent N	%	Not At All N	%	TOTAL
Interests of students	11	22	15	29	16	31	9	18	51
Knowledge of subject of incoming students	15	29	18	35	12	24	6	12	51
Relationship between this course and others taken concurrently	10	20	22	44	14	28	4	8	50
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	22	43	18	35	7	14	4	8	51
Ontario Ministry of Education guidelines	22	43	15	29	7	14	7	14	51
Course outline assigned to you	30	59	6	12	7	14	8	15	51
Special interests or training you might have	21	41	12	24	14	27	4	8	51
Content and approach of principal text(s)	18	35	23	45	5	10	5	10	51
Staffing	2	5	5	14	5	14	25	67	37
Other	2	5	1	3	-	-	37	92	40

TABLE 15.23
 SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
 INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent N	Great Extent %	Moderate Extent N	Moderate Extent %	Small Extent N	Small Extent %	Not At All N	Not At All %	TOTAL
Interests of students	10	20	24	48	14	28	2	4	50
Knowledge of subject of incoming students	14	28	20	40	10	20	6	12	50
Relationship between this course and others taken concurrently	11	22	21	42	13	26	5	10	50
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	14	28	20	40	13	26	3	6	50
Ontario Ministry of Education guidelines	28	56	8	16	4	8	10	20	50
Course outline assigned to you	23	50	11	24	3	7	9	19	46
Special interests or training you might have	14	28	18	36	12	24	6	12	50
Content and approach of principal text(s)	26	54	11	23	8	17	3	6	48
Staffing	3	7	4	10	2	5	31	78	40
Other	4	10	1	3	-	-	35	87	40

TABLE 15.24

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Yes	43	88	42	87
No	6	12	6	13
Total	49	100	48	100

TABLE 15.25

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Excellent	2	4	4	8
Good	17	35	26	53
Fair	27	55	17	35
Poor	3	6	2	4
Total	49	100	49	100

TABLE 15.26

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
A great deal	32	64	24	49
A moderate amount	15	30	22	45
Very little	3	6	3	6
Do not know	-	-	-	-
Total	50	100	49	100

TABLE 15.27

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Great extent	-	-	1	2
Moderate extent	4	8	3	6
Small extent	15	30	9	18
Not at all	31	62	36	74
Total	50	100	49	100

TABLE 15.28

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREREQUISITES FOR THIS COURSE?"

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Yes	45	92	49	96	48	98
No	4	8	2	4	1	2
Total	49	100	51	100	49	100

TABLE 15.29

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Excellent	1	2	2	4	2	4
Good	31	63	31	65	33	66
Fair	16	33	15	16	14	28
Poor	1	2	-	-	1	2
Total	49	100	48	100	50	100

TABLE 15.30

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
A great deal	18	37	28	56	26	52
A moderate amount	28	57	19	38	21	42
Very little	3	6	3	6	3	6
Do not know	-	-	-	-	-	-
Total	49	100	50	100	50	100

TABLE 15.31

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 5 REL & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Great extent	-	-	1	2	-	-
Moderate extent	1	2	1	2	-	-
Small extent	8	16	9	18	9	18
Not at all	40	82	40	78	41	82
Total	49	100	51	100	50	100

TABLE 15.32

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%	1-10%	11-20%	21-30%	31-40%	41-50%	51-75%	76+	TOTAL	MEAN	S.D.
	N %	N %	N %	N %	N %	N %	N %	N %			
Lecture (with or without provision for student questions)	-	18 55	7 21	5 15	2 6	-	1 3	-	33	10.5	12.8
Socratic (question and answer technique, interaction between students and instructor)	-	3 6	7 15	9 19	8 17	5 11	13 28	2 4	47	40.0	23.2
Practically - oriented work - computers, laboratory work, experiments	-	20 95	1 5	-	-	-	-	-	21	2.7	3.8
Small group activities (with the instructor supervising a number of small groups)	-	21 92	1 4	1 4	-	-	-	-	23	3.4	5.2
Seminar, tutorial (with or without additional instructors; this technique may include student presentations)	-	4 66	1 17	-	1 17	-	-	-	6	1.7	6.4
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	-	15 33	6 13	10 22	4 9	7 16	3 7	-	45	23.7	18.1
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	-	7 64	1 9	1 9	-	-	-	2 18	11	5.4	17.6
Testing	-	37 76	10 20	2 4	-	-	-	-	49	10.6	5.7
Audiovisual (television, tapes, films, etc)	-	8 100	-	-	-	-	-	-	8	.9	2.2
Other	-	1 33	1 33	1 33	-	-	-	-	3	1.1	4.6

TABLE 15.34

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS AND FUNCTIONS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		75+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	%		
Lecture (with or without provision for student questions)	-	-	19	49	13	33	1	3	4	10	2	5	-	-	-	-	39	13.0	13.0
Socratic (question and answer technique, interaction between students and instructor)	-	-	3	6	4	8	7	15	7	15	5	10	15	31	7	15	48	47.8	23.3
Practically-oriented work--computers, laboratory work, experiments	-	-	13	100	-	-	-	-	-	-	-	-	-	-	-	-	13	1.2	2.7
Small group activities (with the instructor supervising a number of small groups at the same time)	-	-	21	92	1	4	1	4	-	-	-	-	-	-	-	-	23	3.7	5.3
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	-	-	10	71	3	21	1	7	-	-	-	-	-	-	-	-	14	2.9	6.1
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	-	-	19	44	7	16	6	14	3	7	3	7	5	12	-	-	43	20.6	19.7
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	-	-	5	100	-	-	-	-	-	-	-	-	-	-	-	-	5	0.6	2.2
Testing	-	-	43	88	6	12	-	-	-	-	-	-	-	-	-	-	49	9.2	2.6
Audiovisual (television, tapes, films, etc.)	-	-	10	100	-	-	-	-	-	-	-	-	-	-	-	-	10	0.8	1.7
Other	-	-	-	-	1	100	-	-	-	-	-	-	-	-	-	-	1	0.3	2.1

TABLE 15.35

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		75+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	-	-	17	39	11	25	5	11	7	16	3	7	1	2	-	-	44	18.4	16.2
Socratic (question and answer technique, interaction between students and instructor)	-	-	5	10	6	12	2	4	7	14	11	22	16	32	3	6	50	44.3	21.9
Practically-oriented work--computers, laboratory work, experiments	-	-	5	71	2	29	-	-	-	-	-	-	-	-	-	-	7	1.3	4.2
Small group activities (with the instructor supervising a number of small groups at the same time)	-	-	15	94	-	-	-	-	1	6	-	-	-	-	-	-	16	2.6	5.7
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	-	-	13	86	1	7	1	7	-	-	-	-	-	-	-	-	15	2.3	5.0
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	-	-	17	39	9	20	6	14	8	18	4	9	-	-	-	-	44	18.5	14.4
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	-	-	8	100	-	-	-	-	-	-	-	-	-	-	-	-	8	0.9	2.5
Testing	-	-	42	88	6	12	-	-	-	-	-	-	-	-	-	-	48	8.4	3.5
Audiovisual (television, tapes, films, etc.)	-	-	6	100	-	-	-	-	-	-	-	-	-	-	-	-	6	0.4	1.6
Other	-	-	4	80	-	-	-	-	-	-	-	-	1	20	-	-	5	1.9	9.2

TABLE 15.36

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	-	-	19	47	5	13	5	13	4	10	4	10	3	7	-	-	40	18.0	18.7
Socratic (question and answer technique, interaction between students and instructor)	-	-	4	8	7	14	9	18	8	16	6	12	13	26	3	6	50	41.7	20.8
Practically-oriented work--computers, laboratory work, experiments	-	-	11	92	1	8	-	-	-	-	-	-	-	-	-	-	12	1.4	3.5
Small group activities (with the instructor supervising a number of small groups at the same time)	-	-	16	94	1	6	-	-	-	-	-	-	-	-	-	-	17	2.0	3.8
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	-	-	14	93	1	7	-	-	-	-	-	-	-	-	-	-	15	2.0	4.0
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor; including library or resource centre activity)	-	-	16	33	11	23	9	19	6	13	2	4	3	6	1	2	48	23.8	17.8
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	-	-	4	67	2	33	-	-	-	-	-	-	-	-	-	-	6	0.9	3.1
Testing	-	-	41	82	9	18	-	-	-	-	-	-	-	-	-	-	50	9.3	3.6
Audiovisual (television, tapes, films, radio, etc.)	-	-	8	100	-	-	-	-	-	-	-	-	-	-	-	-	8	0.6	1.5
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0.0	0.0

TABLE 15.37
SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great		Moderate		Small		Not At		TOTAL
	N	%	Extent	%	Extent	%	All	%	
Main text	31	62	13	26	4	8	2	4	50
Main text plus supplementary text(s)	2	4	6	13	15	32	24	51	47
Two or more main texts or materials from other texts	5	11	3	7	4	9	33	73	45
Mimeographed materials (lecture notes, etc.)	13	26	14	28	17	34	6	12	50
Reference books, dictionaries, encyclopedias, etc.	-	-	1	2	7	15	39	83	47
Individualized learning packages	3	7	-	-	6	13	37	80	46
Laboratory and/or computer equipment	-	-	-	-	6	13	39	87	45
Audiovisual media (television, tapes, film strips, etc.)	-	-	-	-	8	17	39	83	47
Other	1	2	1	2	1	2	44	94	47

TABLE 15.38

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great		Moderate		Small		Not At		TOTAL
	N	%	N	%	N	%	All	%	
Main text	42	86	6	12	1	2	-	-	49
Main text plus supplementary text(s)	3	7	3	7	7	17	29	69	42
Two or more main texts or materials from other texts	2	5	3	7	6	14	32	74	43
Mimeographed materials (lecture notes, etc.)	10	20	12	25	21	43	6	12	49
Reference books, dictionaries, encyclopedias, etc.	-	-	2	4	9	18	38	78	49
Individualized learning packages	1	2	2	4	-	-	46	94	49
Laboratory and/or computer equipment	-	-	1	2	3	6	43	92	47
Audiovisual media (television, tapes, film strips, etc.)	-	-	-	-	6	12	43	88	49
Other	-	-	1	2	1	2	43	96	45

TABLE 15.39
 SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS AND FUNCTIONS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "TO WHAT EXTENT DO STUDENTS
 USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	39	80	8	16	2	4	-	-	49
Main text plus supplementary text(s)	3	7	7	15	18	39	18	39	46
Two or more main texts or materials from other texts	1	2	4	9	6	13	34	76	45
Mimeographed materials (lecture notes, etc.)	8	16	14	29	20	41	7	14	49
Reference books, dictionaries, encyclopedias, journals, etc.	-	-	1	2	19	39	29	59	49
Individualized learning packages	-	-	1	2	2	4	44	94	47
Laboratory and/or computer equipment	-	-	1	2	4	9	41	89	46
Audiovisual media (television, tapes, film strips, etc.)	-	-	3	6	5	10	41	84	49
Other	2	4	-	-	2	4	42	91	46

TABLE 15.40
 SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "TO WHAT EXTENT DO STUDENTS
 USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	41	80	8	16	2	4	-	-	51
Main text plus supplementary text(s)	6	12	9	18	19	38	16	32	50
Two or more main texts or materials from other texts	6	12	9	19	8	17	25	52	48
Mimeographed materials (lecture notes, etc.)	6	12	23	45	16	31	6	12	51
Reference books, dictionaries, encyclopedias, journals, etc.	-	-	1	2	16	33	32	65	49
Individualized learning packages	-	-	-	-	2	4	48	96	50
Laboratory and/or computer equipment	1	2	1	2	3	6	44	90	49
Audiovisual media (television, tapes, film strips, etc.)	-	-	1	2	7	14	42	84	50
Other	-	-	-	-	1	2	48	98	49

TABLE 15.41
 SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "TO WHAT EXTENT DO STUDENTS
 USE THE FOLLOWING RESOURCES"

	Great		Moderate		Small		Not At		TOTAL
	N	%	Extent	N	Extent	N	All	%	
Main text	41	86	2	4	2	4	3	6	48
Main text plus supplementary text(s)	5	10	5	10	23	47	16	33	49
Two or more main texts or materials from other texts	1	2	4	9	8	17	33	72	46
Mimeographed materials (lecture notes, etc.)	7	14	12	24	18	36	13	26	50
Reference books, dictionaries, encyclopedias, journals, etc.	-	-	2	4	18	36	30	60	50
Individualized learning packages	1	2	2	4	2	4	42	90	47
Laboratory and/or computer equipment	-	-	-	-	4	8	43	92	47
Audiovisual media (television, tapes, film strips, etc.)	-	-	-	-	7	14	42	86	49
Other	1	2	1	2	-	-	44	96	46

TABLE 15.42
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
0%*	-	-	-	-
1-25%	10	21	2	4
26-50%	23	49	8	17
51-75%	3	6	10	21
76-100%	10	22	24	50
101-150%	1	2	3	6
151-200%	-	-	1	2
200%+	-	-	-	-
Total	47	100	48	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 15.43
SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 4 GENERAL		YEAR 4 ADVANCED	
	N	%	N	%
Yes	33	66	34	69
No	12	24	10	21
Not applicable	5	10	5	10

TABLE 15.44

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 5 REL. & FUNCT		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
0%*	-	-	-	-	-	-
1-25%	1	2	-	-	1	2
25-50%	8	16	4	8	10	21
51-75%	9	19	6	12	6	12
76-100%	19	39	24	48	22	45
101-150%	3	6	10	20	8	16
151-200%	8	16	2	4	2	4
200%+	1	2	4	8	-	-
Total	49	100	50	100	49	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 15.45

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 5 REL. & FUNCT.		YEAR 5 CALCULUS		YEAR 5 ALGEBRA	
	N	%	N	%	N	%
Yes	33	69	35	69	33	67
No	10	21	13	25	14	29
Not applicable	5	10	3	6	2	4
Total	48	100	51	100	49	100

TABLE 15.46

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	-	-	2	18	4	36	5	46	-	-	-	-	-	-	11	30.7	8.3
Mid-term examination(s)	-	-	3	7	9	23	8	20	15	37	5	13	-	-	-	-	40	23.9	15.8
Other written tests	-	-	-	-	1	2	6	12	9	18	10	20	22	44	2	4	50	52.1	17.7
Other oral tests	-	-	1	50	1	50	-	-	-	-	-	-	-	-	-	-	50	0.3	1.8
Individual papers (essays, reports, etc.)	-	-	7	70	2	20	-	-	1	10	-	-	-	-	-	-	10	2.3	6.6
Individual projects (e.g., oral presentations)	-	-	7	78	2	22	-	-	-	-	-	-	-	-	-	-	9	1.4	3.5
Group or team papers, projects	-	-	2	100	-	-	-	-	-	-	-	-	-	-	-	-	2	5.5	-
Problems, exercises	-	-	16	74	1	4	3	14	1	4	1	4	-	-	-	-	22	11.9	11.8
Notebooks	-	-	9	90	1	10	-	-	-	-	-	-	-	-	-	-	10	6.5	3.1
Laboratory and/or other class participation	-	-	9	82	2	18	-	-	-	-	-	-	-	-	-	-	11	1.4	3.2
Effort	-	-	16	80	4	20	-	-	-	-	-	-	-	-	-	-	20	3.1	4.6
Attendance	-	-	10	100	-	-	-	-	-	-	-	-	-	-	-	-	10	1.1	2.4
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0.0	0.0

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 15.47

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED

TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -

"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK

NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	-	-	-	-	1	10	4	40	3	30	2	20	-	-	-	-	10	33.7	9.9
Mid-term examination(s)	-	-	-	-	9	23	5	13	18	46	7	18	-	-	-	-	39	25.6	16.0
Other written tests	-	-	-	-	-	-	1	2	8	17	10	21	25	52	4	8	48	55.9	16.0
Other oral tests	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0.0	0.0
Individual papers (essays, reports, etc.)	-	-	8	80	2	20	-	-	-	-	-	-	-	-	-	-	10	1.8	4.3
Individual projects (e.g., oral presentation)	-	-	4	100	-	-	-	-	-	-	-	-	-	-	-	-	4	0.4	1.7
Group or team papers, projects	-	-	1	100	-	-	-	-	-	-	-	-	-	-	-	-	1	5.5	0
Problems, exercises	-	-	18	90	1	5	1	5	-	-	-	-	-	-	-	-	20	7	4.8
Notebooks	-	-	4	80	1	20	-	-	-	-	-	-	-	-	-	-	5	7.5	4
Laboratory and/or other class participation	-	-	5	100	-	-	-	-	-	-	-	-	-	-	-	-	5	0.4	1.4
Effort	-	-	19	90	1	5	1	5	-	-	-	-	-	-	-	-	21	2.8	4.4
Attendance	-	-	4	100	-	-	-	-	-	-	-	-	-	-	-	-	4	0.4	1.6
Other	-	-	1	50	-	-	-	-	1	50	-	-	-	-	-	-	2	0.7	4.8

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 15.48

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS AND FUNCTIONS

TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -

"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK

NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Final examination*	-	-	-	-	1	10	5	50	2	20	2	20	-	-	-	-	10
Mid-term examination(s)	-	-	1	2	11	25	9	20	18	40	6	13	-	-	-	-	45
Other written tests	-	-	-	-	-	-	7	14	8	16	12	25	18	37	4	8	49
Other oral tests	-	-	1	50	1	50	-	-	-	-	-	-	-	-	-	-	2
Individual papers (essays, reports, etc.)	-	-	8	80	2	20	-	-	-	-	-	-	-	-	-	-	10
Individual projects (e.g., oral presentations)	-	-	8	89	-	-	1	11	-	-	-	-	-	-	-	-	9
Group or team papers, projects	-	-	3	100	-	-	-	-	-	-	-	-	-	-	-	-	3
Problems, exercises	-	-	16	76	5	24	-	-	-	-	-	-	-	-	-	-	21
Notebooks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Laboratory and/or other class participation	-	-	7	100	-	-	-	-	-	-	-	-	-	-	-	-	7
Effort	-	-	11	92	1	8	-	-	-	-	-	-	-	-	-	-	12
Attendance	-	-	4	100	-	-	-	-	-	-	-	-	-	-	-	-	4
Other	-	-	1	100	-	-	-	-	-	-	-	-	-	-	-	-	1

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 15.49
SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Final examination*	-	-	-	-	2	15	7	54	2	15	2	15	-	-	-	-	13
Mid-term examination(s)	-	-	1	2	12	25	10	21	15	31	7	15	2	4	1	2	48
Other written tests	-	-	-	-	2	4	2	4	8	16	8	16	27	56	2	4	49
Other oral tests	-	-	1	100	-	-	-	-	-	-	-	-	-	-	-	-	1
Individual papers (essays, reports, etc.)	-	-	18	100	-	-	-	-	-	-	-	-	-	-	-	-	18
Individual projects (e.g., oral presentations)	-	-	4	67	2	33	-	-	-	-	-	-	-	-	-	-	6
Group or team papers, projects	-	-	3	100	-	-	-	-	-	-	-	-	-	-	-	-	3
Problems, exercises	-	-	14	100	-	-	-	-	-	-	-	-	-	-	-	-	14
Notebooks	-	-	4	100	-	-	-	-	-	-	-	-	-	-	-	-	4
Laboratory and/or class participation	-	-	3	75	1	25	-	-	-	-	-	-	-	-	-	-	4
Effort	-	-	10	100	-	-	-	-	-	-	-	-	-	-	-	-	10
Attendance	-	-	1	100	-	-	-	-	-	-	-	-	-	-	-	-	1
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 15.50

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
 TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
 "ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
 NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Final examination*	-	-	1	8	1	8	6	51	3	25	1	8	-	-	-	-	12
Mid-term examination(s)	-	-	1	2	7	17	7	17	19	45	6	14	2	5	-	-	42
Other written tests	-	-	-	-	1	2	5	10	5	10	12	24	22	44	5	10	50
Other oral tests	-	-	3	100	-	-	-	-	-	-	-	-	-	-	-	-	3
Individual papers (essays, reports, etc.)	-	-	12	92	1	8	-	-	-	-	-	-	-	-	-	-	13
Individual projects (e.g., oral presentations)	-	-	11	100	-	-	-	-	-	-	-	-	-	-	-	-	11
Group or team papers, projects	-	-	3	75	1	25	-	-	-	-	-	-	-	-	-	-	4
Problems, exercises	-	-	20	87	3	13	-	-	-	-	-	-	-	-	-	-	23
Notebooks	-	-	4	100	-	-	-	-	-	-	-	-	-	-	-	-	4
Laboratory and/or other class participation	-	-	5	100	-	-	-	-	-	-	-	-	-	-	-	-	5
Effort	-	-	10	100	-	-	-	-	-	-	-	-	-	-	-	-	10
Attendance	-	-	4	100	-	-	-	-	-	-	-	-	-	-	-	-	4
Other	-	-	2	100	-	-	-	-	-	-	-	-	-	-	-	-	2

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 15.51
 SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use and understand fundamental terminology	18	36	27	54	5	10	-	-	50	2.3	0.6
Conceptual and practical tools for mathematical application	28	56	19	38	3	6	-	-	50	2.5	0.6
Skills needed for further courses or work in mathematics	26	53	17	35	6	12	-	-	49	2.4	0.7
Ability to apply knowledge and skills to other subject areas or situations	6	12	24	48	19	38	1	2	50	1.7	0.7
Skills related to subsequent occupations	9	18	15	30	22	44	4	8	50	1.6	0.9
Sound and systematic study habits	16	32	20	40	12	24	2	4	50	2.0	0.8
Ability to work independently	14	28	20	40	10	20	6	12	50	1.8	1.0
Ability to assess own skills and abilities	6	13	15	31	16	33	11	23	48	1.3	1.0
Ability to estimate an answer	14	28	17	34	15	30	4	8	50	1.8	0.9
Ability to check the reasonableness of an answer	18	36	22	44	9	18	1	2	50	2.1	0.8
Ability to construct, use and interpret concrete models and mathematical diagrams	5	10	24	48	17	34	4	8	50	1.6	0.8
Ability to understand a problem stated in English and translate it into mathematical language to solve it	24	48	23	46	3	6	-	-	50	2.4	0.6
Ability to use symbolic notation	7	14	21	42	18	36	4	8	50	1.6	0.8

TABLE 15.51 (cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to read a mathematical textbook	6	12	10	20	27	54	7	14	50	1.3	0.9
Familiarity with basic literature and use of resources (library, texts, other students and colleagues)	2	4	5	10	19	40	22	46	48	0.7	0.8
Ability to write a proof	6	13	8	17	10	21	23	49	47	0.9	1.1
Ability to make and test generaliza- tions	-	-	14	29	18	38	16	33	48	1.0	0.8
Ability to work intuitively and use appropriate levels of intuition and rigour	1	2	16	33	20	41	12	24	49	1.1	0.8
Ability to understand logical argument and the direction of an implication	5	10	18	36	19	38	8	16	50	1.4	0.9
Ability to use examples and counter- examples	6	12	16	33	16	33	11	22	49	1.3	1.0
Ability to think logically in order to solve problems systematically and make rational decisions	22	45	22	45	5	10	-	-	49	2.3	0.7
Ability to solve multi-stage problems	6	12	21	43	19	39	3	6	49	1.6	0.8
Ability to formulate and work from useable definitions	9	19	16	33	15	31	8	17	48	1.5	1.0
Appreciation and/or understanding of the underlying logical structure of mathematics	9	19	11	23	17	35	11	23	48	1.4	1.0
In-depth understanding of some area or topic in mathematics	14	29	11	22	16	33	8	16	49	1.6	1.1

TABLE 15.51 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL MEAN	S.D.
	N	%	N	%	N	%	N	%		
Appreciation of the nature and importance of proof in mathematics	1	2	12	26	13	28	20	44	46	0.9
Appreciation of the contribution of mathematics to civilization	3	6	14	28	20	40	13	26	50	1.1
Appreciation of the power of mathematics to solve complex problems	3	6	16	33	22	45	8	16	49	1.3
Understanding and appreciation of the unity of mathematics through the inter-relationships of its various branches	2	4	11	22	18	36	19	38	50	0.9
Appreciation of mathematical elegance, e.g. in a proof	2	4	4	9	16	34	25	53	47	0.8
Judgement and discrimination about appropriate procedures and their relevance to solving specific problems	6	12	18	36	17	34	9	18	50	1.4
Positive attitudes for mathematics	19	39	22	45	7	14	1	2	49	2.2
Appreciation of mathematics as a human activity aimed at extending man's knowledge, and his understanding and use of his environment	4	8	18	36	13	26	15	30	50	1.2

TABLE 15.52

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis			Moderate Emphasis			Very Little Emphasis			No Emphasis			TOTAL	MEAN	S.D.
	N	%		N	%		N	%		N	%				
Ability to use and understand fundamental terminology	35	71		14	29		-	-		-	-		49	2.7	0.5
Conceptual and practical tools for mathematical application	24	49		17	35		8	16		-	-		49	2.3	0.7
Skills needed for further courses or work in mathematics	42	86		7	14		-	-		-	-		49	2.9	0.4
Ability to apply knowledge and skills to other subject areas or situations	2	4		25	51		18	37		4	8		49	1.5	0.7
Skills related to subsequent occupations	2	4		11	23		28	58		7	15		48	1.2	0.7
Sound and systematic study habits	17	35		23	47		7	14		2	4		49	2.1	0.8
Ability to work independently	13	27		29	59		6	12		1	2		49	2.1	0.7
Ability to assess own skills and abilities	6	12		16	33		23	47		4	8		49	1.5	0.3
Ability to estimate an answer	8	17		17	35		20	42		3	6		48	1.6	0.8
Ability to check the reasonableness of an answer	12	24		24	49		13	27		-	-		49	2.0	0.7
Ability to construct, use and interpret concrete models and mathematical diagrams	15	31		14	29		13	27		6	13		48	1.8	1.0
Ability to understand a problem stated in English and translate it into mathematical language to solve it	32	65		15	31		2	4		-	-		49	2.6	0.6

TABLE 15.52 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal			Moderate			Very Little			No		TOTAL	MEAN	S.D.
	N	%	of Emphasis	N	%	Emphasis	N	%	Emphasis	N	%			
Ability to use symbolic notation	20	41	21	43	8	16	-	-	-	-	-	49	2.2	0.7
Ability to read a mathematical textbook	6	12	19	39	16	33	8	16	49	1.5	0.9			
Familiarity with basic literature and use of resources (library, texts, other students and colleagues)	3	6	5	11	22	47	17	36	47	0.9	0.8			
Ability to write a proof	15	31	19	40	12	25	2	4	48	2.0	0.9			
Ability to make and test generalizations	3	6	15	31	22	46	8	17	48	1.3	0.8			
Ability to work intuitively and use appropriate levels of intuition and rigour	6	13	19	40	18	38	4	9	47	1.6	0.8			
Ability to understand logical argument and the direction of an implication	11	23	19	40	15	31	3	6	48	1.8	0.9			
Ability to use examples and counter-examples	9	19	20	41	10	21	9	19	49	1.6	1.0			
Ability to think logically in order to solve problems systematically and make rational decisions	29	59	18	37	1	2	1	2	49	2.5	0.6			
Ability to solve multi-stage problems	15	31	22	46	11	23	-	-	48	2.1	0.7			
Ability to formulate and work from useable definitions	6	12	26	53	16	33	1	2	49	1.8	0.7			

TABLE 15.52 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little		No		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Appreciation and/or understanding of the underlying logical structure of mathematics	11	23	20	42	14	29	3	6	48	1.8	0.9
In-depth understanding of some area or topic in mathematics	15	31	12	25	13	27	8	17	48	1.7	1.1
Appreciation of the nature and importance of proof in mathematics	3	6	17	35	24	50	4	8	48	1.4	0.7
Appreciation of the contribution of mathematics to civilization	2	4	10	21	23	49	12	26	47	1.0	0.8
Appreciation of the power of mathematics to solve complex problems	8	16	16	33	20	41	5	10	49	1.6	0.9
Understanding and appreciation of the unity of mathematics through the interrelationships of its various branches	10	21	8	16	21	44	9	19	48	1.4	1.0
Appreciation of mathematical elegance, e.g. in a proof	6	13	14	30	18	38	9	19	47	1.4	0.9
Judgement and discrimination about appropriate procedures and their relevance to solving specific problems	10	21	22	46	14	29	2	4	48	1.8	0.8
Positive attitudes for mathematics	22	45	23	47	4	8	-	-	49	2.4	0.6
Appreciation of mathematics as a human activity aimed at extending man's knowledge, and his understanding and use of his environment	8	17	10	22	18	39	10	22	46	1.3	1.0

TABLE 15.53
SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS AND FUNCTIONS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use and understand fundamental terminology	35	71	14	29	-	-	-	-	49	2.7	0.5
Conceptual and practical tools for mathematical application	26	53	20	41	3	6	-	-	49	2.5	0.6
Skills needed for further courses or work in mathematics	38	78	10	20	1	2	-	-	49	2.8	0.5
Ability to apply knowledge and skills to other subject areas or situations	8	16	24	49	17	35	-	-	49	1.8	0.7
Skills related to subsequent occupations	2	4	14	30	19	40	12	26	47	1.1	0.8
Sound and systematic study habits	14	29	22	45	10	20	3	6	49	2.0	0.9
Ability to work independently	17	35	21	43	10	20	1	2	49	2.1	0.8
Ability to assess own skills and abilities	5	10	13	27	19	40	11	23	48	1.3	0.9
Ability to estimate an answer	6	13	16	34	19	40	6	13	47	1.5	0.9
Ability to check the reasonableness of an answer	12	25	16	33	17	36	3	6	48	1.8	0.9
Ability to construct, use and interpret concrete models and mathematical diagrams	15	31	15	31	16	32	3	6	49	1.9	0.9
Ability to understand a problem stated in English and translate it into mathematical language to solve it	30	63	12	25	5	10	1	2	48	2.5	0.8
Ability to use symbolic notation	22	45	18	37	9	18	-	-	49	2.3	0.8
Ability to read a mathematical textbook	10	20	18	37	14	29	7	14	49	1.6	1.0

TABLE 15.53 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS AND FUNCTIONS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Familiarity with basic literature and use of resources (library, texts, other students and colleagues)	3	6	5	11	20	43	19	40	47	0.8	0.9
Ability to write a proof	18	37	19	39	12	24	-	-	49	2.1	0.8
Ability to make and test generalizations	5	10	15	31	22	45	7	14	49	1.4	0.9
Ability to work intuitively and use appropriate levels of intuition and rigour	4	8	24	50	15	31	5	11	48	1.6	0.8
Ability to understand logical argument and the direction of an implication	16	33	16	33	11	22	6	12	49	1.9	1.0
Ability to use examples and counter- examples	10	20	17	35	17	35	5	10	49	1.7	0.9
Ability to think logically in order to solve problems systematically and make rational decisions	25	51	18	37	6	12	-	-	49	2.4	0.7
Ability to solve multi-stage problems	24	49	22	45	2	4	1	2	49	2.4	0.7
Ability to formulate and work from useable definitions	16	33	20	41	8	16	5	10	49	2.0	0.9
Appreciation and/or understanding of the underlying logical structure of mathematics	14	29	14	29	15	30	6	12	49	1.7	1.0
In-depth understanding of some area or topic in mathematics	26	55	13	27	4	9	4	9	47	2.3	0.9

TABLE 15.53 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS AND FUNCTIONS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Appreciation of the nature and importance of proof in mathematics	12	25	16	34	15	32	4	9	47	1.8	0.9
Appreciation of the contribution of mathematics to civilization	4	8	13	27	14	29	17	36	48	1.1	1.0
Appreciation of the power of mathematics to solve complex problems	12	24	15	31	14	29	8	16	49	1.6	1.0
Understanding and appreciation of the unity of mathematics through the inter- relationships of its various branches	10	20	20	41	10	20	9	19	49	1.6	1.0
Appreciation of mathematical elegance, e.g. in a proof	6	13	21	44	16	33	5	10	48	1.6	0.8
Judgement and discrimination about appropriate procedures and their relevance to solving specific problems	6	12	26	53	13	27	4	8	49	1.7	0.8
Positive attitudes for mathematics	26	53	17	35	5	10	1	2	47	2.4	0.8
Appreciation of mathematics as a human activity aimed at extending man's know- ledge, and his understanding and use of his environment	10	20	13	27	17	35	9	18	49	1.5	1.0

TABLE 15.54

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use and understand fundamental terminology	42	82	8	16	1	2	-	-	51	2.8	0.4
Conceptual and practical tools for mathematical application	35	69	14	27	2	4	-	-	51	2.6	0.6
Skills needed for further courses or work in mathematics	41	80	10	20	-	-	-	-	51	2.8	0.4
Ability to apply knowledge and skills to other subject areas or situations	7	14	34	67	9	17	1	2	51	1.9	0.6
Skills related to subsequent occupations	4	8	15	30	19	38	12	24	50	1.2	0.9
Sound and systematic study habits	19	38	22	44	6	12	3	6	50	2.1	0.8
Ability to work independently	13	26	28	56	8	16	1	2	50	2.1	0.7
Ability to assess own skills and abilities	6	12	20	41	18	37	5	10	49	1.6	0.8
Ability to estimate an answer	10	20	15	29	24	47	2	4	51	1.6	0.8
Ability to check the reasonableness of an answer	15	29	22	43	13	26	1	2	51	2.0	0.8
Ability to construct, use and interpret concrete models and mathematical diagrams.	10	21	28	57	8	16	3	6	49	1.9	0.8
Ability to understand a problem stated in English and translate it into mathematical language to solve it	34	67	16	31	1	2	-	-	51	2.6	0.5

TABLE 15.54 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use symbolic notation	29	57	18	35	3	6	1	2	51	2.5	0.7
Ability to read a mathematical textbook	7	14	25	50	13	26	5	10	50	1.7	0.8
Familiarity with basic literature and use of resources (library, texts, other students and colleagues)	1	2	8	16	25	50	16	32	50	0.9	0.7
Ability to write a proof	9	18	26	53	11	23	3	6	49	1.8	0.8
Ability to make and test generalizations	8	16	14	27	23	45	6	12	51	1.5	0.9
Ability to work intuitively and use appropriate levels of intuition and rigour	5	10	24	47	19	37	3	6	51	1.6	0.7
Ability to understand logical argument and the direction of an implication	14	28	21	41	15	29	1	2	51	1.9	0.8
Ability to use examples and counter- examples	14	28	12	23	20	39	5	10	51	1.7	1.0
Ability to think logically in order to solve problems systematically and make rational decisions	32	63	15	29	4	8	-	-	51	2.5	0.6
Ability to solve multi-stage problems	26	51	20	39	5	10	-	-	51	2.4	0.7
Ability to formulate and work from useable definitions	21	41	15	29	12	24	3	6	51	2.1	0.9
Appreciation and/or understanding of the underlying logical structure of mathematics	17	33	19	37	11	22	4	8	51	2.0	0.9

TABLE 15.54 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
In-depth understanding of some area or topic in mathematics	18	35	22	43	10	20	1	2	51	2.1	0.8
Appreciation of the nature and importance of proof in mathematics	11	22	18	35	20	39	2	4	51	1.7	0.8
Appreciation of the contribution of mathematics to civilization	6	12	10	20	21	43	12	25	49	1.2	0.9
Appreciation of the power of mathematics to solve complex problems	21	41	18	35	10	20	2	4	51	2.1	0.9
Understanding and appreciation of the unity of mathematics through the inter- relationships of its various branches	11	22	22	43	16	31	2	4	51	1.8	0.8
Appreciation of mathematical elegance, e.g. in a proof	13	26	14	27	18	35	6	12	51	1.7	1.0
Judgement and discrimination about appropriate procedures and their relevance to solving specific problems	17	33	21	41	11	22	2	4	51	2.0	0.8
Positive attitudes for mathematics	24	48	17	34	9	18	-	-	50	2.3	0.8
Appreciation of mathematics as a <u>human</u> activity aimed at extending man's know- ledge, and his understanding and use of his environment	6	12	15	31	21	43	7	14	49	1.4	0.9

TABLE 15.55
 SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use and understand fundamental terminology	39	80	10	20	-	-	-	-	49	2.8	0.4
Conceptual and practical tools for mathematical application	31	62	16	32	3	6	-	-	50	2.6	0.6
Skills needed for further courses or work in mathematics	40	80	9	18	1	2	-	-	50	2.8	0.5
Ability to apply knowledge and skills to other subject areas or situations	5	10	31	63	11	22	2	4	49	1.8	0.7
Skills related to subsequent occupations	3	7	13	26	20	41	13	26	49	1.1	0.9
Sound and systematic study habits	25	50	17	34	6	12	2	4	50	2.3	0.8
Ability to work independently	18	36	23	46	8	16	1	2	50	2.2	0.8
Ability to assess own skills and abilities	8	16	19	39	13	27	9	18	49	1.5	1.0
Ability to estimate an answer	9	18	18	36	17	34	6	12	50	1.6	0.9
Ability to check the reasonableness of an answer	16	32	20	40	12	24	2	4	50	2.0	0.8
Ability to construct, use and interpret concrete models and mathematical diagrams	18	36	23	46	8	16	1	2	50	2.2	0.8
Ability to understand a problem stated in English and translate it into mathematical language to solve it	29	58	15	30	6	12	-	-	50	2.5	0.7

TABLE 15.55 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use symbolic notation	28	56	19	38	3	6	-	-	50	2.5	0.7
Ability to read a mathematical textbook	14	28	20	40	12	24	4	8	50	1.9	0.9
Familiarity with basic literature and use of resources (library, texts, other students and colleagues)	3	6	11	22	18	36	18	36	50	1.0	0.9
Ability to write a proof	24	48	17	34	8	16	1	2	50	2.3	0.8
Ability to make and test generalizations	9	18	21	42	15	30	5	10	50	1.7	0.9
Ability to work intuitively and use appropriate levels of intuition and rigour	12	24	24	48	8	16	6	12	50	1.8	0.9
Ability to understand logical argument and the direction of an implication	17	35	17	35	11	22	4	8	49	2.0	0.9
Ability to use examples and counter- examples	13	26	15	30	19	38	3	6	50	1.8	0.9
Ability to think logically in order to solve problems systematically and make rational decisions	28	57	18	37	3	6	-	-	49	2.5	0.6
Ability to solve multi-stage problems	19	38	27	54	3	6	1	2	50	2.3	0.7
Ability to formulate and work from useable definitions	18	36	18	36	13	26	1	2	50	2.1	0.8
Appreciation and/or understanding of the underlying logical structure of mathematics	16	32	21	42	12	24	1	2	50	2.0	0.8

TABLE 15.55 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
In-depth understanding of some area or topic in mathematics	18	37	19	39	10	20	2	4	49	2.1	0.9
Appreciation of the nature and importance of proof in mathematics	17	34	17	34	14	28	2	4	50	2.0	0.9
Appreciation of the contribution of mathematics to civilization	4	9	10	20	25	51	10	20	49	1.2	0.8
Appreciation of the power of mathematics to solve complex problems	13	26	22	44	11	22	4	8	50	1.9	0.9
Understanding and appreciation of the unity of mathematics through the inter-relationships of its various branches	9	18	20	40	17	34	4	8	50	1.7	0.9
Appreciation of mathematical elegance, e.g. in a proof	10	20	20	41	14	29	5	10	49	1.7	0.9
Judgement and discrimination about appropriate procedures and their relevance to solving specific problems	11	22	24	48	12	24	3	6	50	1.9	0.8
Positive attitudes for mathematics	24	49	19	39	5	10	1	2	49	2.3	0.7
Appreciation of mathematics as a human activity aimed at extending man's knowledge, and his understanding and use of his environment	6	12	15	30	18	36	11	22	50	1.3	0.9

TABLE 15.56
 SECONDARY SCHOOL MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	YEAR 4 GENERAL MEAN	YEAR 4 ADVANCED MEAN
Basic arithmetic	12.4	3.4
Business arithmetic	10.5	0.7
Basic algebra	23.4	13.9
Quadratic functions and equations	11.1	27.6
Exponential and logarithmic functions	10.4	19.7
Sequences and series	7.7	6.8
Analytic geometry and vectors	3.1	6.0
Synthetic geometry	1.1	5.8
Trigonometry, complex numbers and statics	15.4	16.0
Calculus	0.5	0.1
Statistics and probability	4.6	0.0

TABLE 15.57

SECONDARY SCHOOL MATHEMATICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	RELATIONS AND FUNCTIONS	
	MEAN	S.D.
<u>RELATIONS AND FUNCTIONS</u>		
Function as a mapping	3.2	2.0
Inverse of a function	2.6	1.2
Graphs and properties of second degree relations using previously known skills	5.1	2.9
Equations and graphs of conics using focus-directrix definitions	9.0	4.8
Equations of conics in non-standard positions	7.5	4.9
Applications	4.6	5.4
Intersections of lines and conics; e.g., tangents	5.4	2.6
Intersections of conics and conics	3.6	2.0
Domain, range, and graph of basic trigonometric functions	4.5	2.3
Standard trigonometric formulae and applications	9.0	5.0
Trigonometric identity problems and equations	5.7	2.6
Phase shift, period, and amplitude	4.1	3.1
Translations of the plane	5.1	2.6
Rotations of the plane	5.9	3.2
Reflections of the plane	3.1	1.9
Study of general conic	5.7	4.4
<u>COMMON TOPICS</u>		
Matrices and linear transformations	1.7	-
Polar coordinates	0.8	-
Mathematics of investment	3.8	-
Statistics and probability	4.3	-
Other	0.0	-
<u>OTHER TOPICS</u>		
Year 5	3.0	-
University	1.9	-

SECONDARY SCHOOL MATHEMATICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS	
	MEAN	S.D.
<u>CALCULUS</u>		
Limit of a function: intuitive approach via sequences and series	5.7	3.7
Rate of change: slopes, secants, tangents	4.9	2.3
Derivatives of powers, products, and quotients	6.2	3.1
Other derivatives: functions of a function, trig functions	5.5	3.2
Applications of derivatives to tangents to curves	3.0	1.4
Further applications: velocity, acceleration	5.6	2.5
Second derivative and its use, curve-tracing	4.0	2.0
Maxima and minima problems	5.4	2.0
Rate of change problems	5.1	2.0
Differential equations; anti-derivatives applied to curves and motion	5.5	4.7
Areas between curves and axes	3.2	1.6
Areas enclosed between curves	2.7	1.5
Volumes of rotation	2.0	2.2
Integration using numerical methods	1.0	1.6
Applications involving complex numbers and/or polar coordinates	1.1	2.9
<u>CALCULUS - Advanced approach</u>		
Derivatives		
Definition and algebra of derivatives	1.7	2.0
Chain rule	2.5	1.6
Derivatives of elementary functions	2.9	2.3
Applications of differentiation		
Related rates	2.4	2.3
Optimization	1.2	1.8
Graph sketching	2.3	2.0
Scientific examples	0.6	1.1
L'Hopital's Rule to limits	0.1	.3

TABLE 15.58 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS	
	MEAN	S.D.
Integration		
Definition of integral and algebraic integration	1.8	2.6
Fundamental Theorem of calculus	0.8	1.4
Mean value theorem (MVT)	0.0	0.1
Application of MVT to approximation	0.0	0.2
Techniques of integration		
Substitution	2.2	2.9
Trigonometric substitution	1.5	3.1
Parts	1.0	1.3
Partial fractions	1.0	1.2
Applications of integration		
Area	2.0	1.9
Volume	1.1	1.4
Work	0.2	0.5
Arc length	0.2	0.4
Improper integrals	0.1	0.8
Taylor's theorem	0.1	0.4
Logarithmic and exponential functions	1.6	2.2
Hyperbolic function	0.1	0.3
<u>COMMON TOPICS</u>		
Complex numbers		
Definitions and field properties	0.4	1.1
Solutions of quadratic equations	0.2	0.6
Geometric and polar forms	0.3	0.8
De Moivre's theorem	0.4	1.1
Polar coordinates		
Correspondence and conversion between rectangular, polar, and vector descriptions of point P	0.5	1.4
Graphing	0.7	1.4
Statistics and probability		
Statistics	0.3	-
Probability	0.5	-
<u>OTHER TOPICS</u>		
Year 5	3.0	-
University	0.1	-

SECONDARY SCHOOL MATHEMATICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	ALGEBRA	
	MEAN	S.D.
<u>ALGEBRA</u>		
Sets, subsets		
Definition and laws of combinations	4.0	2.5
Fundamental counting principles	2.7	1.9
Permutations	4.4	2.2
Combinations	4.6	2.4
Mathematical induction		
Method; use with properties of sigma notation	3.1	1.7
Applications and counterexamples	3.0	1.8
Binomial theorem	5.4	2.8
Vectors		
Definition and properties	4.1	2.4
Geometric uses	4.5	3.1
Vectors as ordered pairs, ordered triplets	3.8	2.0
Linear combinations of vectors	3.8	1.7
Definition, formulae and algebraic properties of dot product	4.3	1.8
Projections, unit vectors, applications to physics	4.8	3.0
Equations of lines		
Vector and linear equations in 2-space	3.5	1.8
Vector and parametric equations in 3-space	2.9	1.4
Direction angles, cosines, and numbers	2.2	1.2
Equations of planes		
Vector, parametric, and linear equations in 3-space	3.8	1.5
Solution of sets of 2 or 3 linear equations	2.8	1.3
Systems of linear equations		
<u>m</u> equations in <u>n</u> unknowns	1.9	1.5
Augmented matrix; row reduced echelon form	2.6	1.4

TABLE 15.59 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	ALGEBRA	
	MEAN	S.D.
Solutions in parametric form	1.7	1.3
Consistency and inconsistency	1.8	1.1
<u>COMMON TOPICS</u>		
Matrices and linear transformations		
Matrices: definitions, equations, properties	2.6	2.2
Linear transformations: examples, dot product, etc.	1.7	2.1
Linear transformations: properties, A^{-1} , non-invertible matrices	2.4	2.9
Groups, rings and fields		
Definition; study of uses of typical groups, e.g., symmetry	0.4	1.1
Number systems and sets of functions as groups	0.4	0.7
Permutations	0.3	0.7
Group properties of 2×2 matrices	0.2	0.5
Transformations of a regular tetrahedron and cube	0.1	0.5
Characteristic properties and examples of rings and fields	0.3	0.9
Complex numbers		
Definitions and field properties	0.8	1.4
Solutions of quadratic equations	0.6	0.9
Geometric and polar forms	0.8	1.3
De Moivre's theorem	0.8	1.3
Polar coordinates		
Correspondence and conversion between rectangular, polar, and vector descriptions of point P.	0.6	1.3
Graphing	0.7	1.7
Logical reasoning	1.1	-
Probability and statistics		
Descriptive statistics topics (4)	0.1	-
Probability topics (6)	2.9	-
<u>OTHER TOPICS</u>		
Year 5	2.9	-
University	4.7	-

TABLE 15.60
SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		ENTRY	EXIT	MEAN ^a	ENTRY	EXIT	S.D.			
BASIC ARITHMETIC										
Fundamental arithmetic operations with fractions, decimals and integers.	40	2.6	.7	3.2	.6	3.5	.7	3.8	1.1	50
Commutative, associative and distributive properties applied to these operations.	28	1.9	.9	2.5	1.1	2.7	1.3	3.0	1.7	32
Percentage.	36	2.3	.7	3.1	.7	3.3	.9	3.8	1.1	44
Simple and compound interest.	60	1.8	1.0	3.0	1.0	2.3	1.0	3.3	1.3	36
Measurement: use of exact and approximate numbers (error, precision, accuracy, rounding off).	24	1.8	1.0	2.5	1.1	2.5	1.3	3.1	1.6	24
Scientific notation: conversion to and from.	46	2.0	1.0	3.0	.9	2.7	1.0	3.3	1.3	32
Scientific notation: use in computation and estimation.	50	1.7	1.0	2.8	1.1	2.3	1.2	3.0	1.5	34
Metric system: traditional units and uses.	16	1.1	.9	1.9	1.4	2.0	1.4	2.3	1.8	18
Metric system - S.I.U.	10	1.1	1.0	1.5	1.3	2.2	1.5	2.2	1.8	18
Pictorial representation of data (bar, line, directed number graphs, histograms, pie charts).	12	1.7	1.2	2.3	1.3	2.2	1.2	2.9	1.1	10
Fundamental operations with integers.	34	2.6	.8	3.5	.5	3.2	.8	4.1	.6	26
Real numbers (rationals, irrationals, recurring and non-recurring decimals, etc.)	38	1.9	.9	2.9	1.1	2.6	1.1	3.5	1.2	30

^aThe means in this table are based on a response key which ranges from 0-indicating No Knowledge to 5-Complete mastery; understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.
^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 15.60 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY MEAN	S.D.	EXIT MEAN	S.D.	ENTRY MEAN	S.D.	EXIT MEAN	S.D.	
BUSINESS ARITHMETIC										
Home ownership.	32	.7	.6	2.7	1.1	1.2	.7	3.5	1.0	16
Municipal Taxation.	20	.6	.7	2.4	1.5	1.2	.7	3.4	1.3	14
Foreign exchange	14	.4	.5	2.5	1.8	.7	.5	3.1	1.6	4
Equations of equivalence.	12	.4	.8	1.7	1.7	.7	1.2	2.1	1.9	4
Ordinary annuities	58	.2	.6	2.9	.6	.7	.8	3.5	.8	22
Annuities due and deferred.	28	.1	.3	2.4	1.2	.5	.6	3.1	1.5	10
Stocks.	14	.2	.4	1.6	1.4	.6	.5	2.1	1.3	8
Sinking funds.	20	.1	.3	2.3	1.1	.6	.7	2.7	1.4	8
Customs duties and excise taxes.	8	.3	.5	1.6	1.8	.6	.7	1.9	1.7	2
Bonds and debentures.	14	.3	.5	1.6	1.3	.8	.6	2.2	1.3	6
Income tax.	28	.8	.9	2.7	1.3	.9	.8	3.0	1.3	4
Break-even analysis.	0	.4	1.1	.4	1.1	.4	1.1	.4	1.1	0
BASIC ALGEBRA										
Generalized arithmetic: literal notation, idea of variable.	50	2.2	.7	3.2	.9	3.0	.9	3.8	1.0	38
Manipulating, simplifying and evaluating algebraic expressions	72	2.0	.8	3.2	.5	2.8	.9	3.9	.6	48
Linear equations and word problems involving one unknown.	48	1.9	.7	2.8	1.0	2.8	1.2	3.6	1.2	44
Systems of linear equations in 2 unknowns and applications.	52	1.7	.9	2.8	.9	2.4	1.0	3.4	1.1	38
Systems of linear equations in 3 unknowns.	16	.9	1.0	1.9	1.3	1.4	1.5	2.3	1.7	10

TABLE 15.60 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Solution of linear equations using determinants.	2	.0	.0	.2	.7	.6	1.2	.6	1.2	4
Solution of linear equations using matrices.	2	.3	1.0	.6	1.1	.5	.9	.8	1.4	2
Linear inequalities and graphical solution of linear programming problems.	8	.8	1.1	1.3	1.5	1.4	1.6	2.1	1.6	6
Factoring: various types, complex fractions.	90	1.7	.7	3.0	.7	2.2	.9	3.6	.8	46
Operations with rational algebraic fractions.	70	1.4	.9	2.8	.9	2.1	1.1	3.3	1.1	40
Solution of simple rational equations.	58	1.8	.8	3.0	.8	2.5	.9	3.5	.9	34
Operations with radicals and irrationalals.	70	1.4	.8	2.9	.8	2.2	.9	3.5	.8	42
Solution of radical and irrational equations.	60	.8	1.0	2.4	.9	1.4	1.2	3.0	1.0	30
Four fundamental operations on polynomials.	76	2.0	.7	3.2	.5	2.6	.7	3.7	.6	48
Manipulation, rearrangement, evaluation of algebraic formulae.	52	1.5	.7	2.7	.9	2.5	1.1	3.6	1.1	36
Dimensional analysis: use with formulae and prefixes (e.g., kilo, micro).	4	.3	.7	.7	1.5	.9	1.0	1.6	1.9	4
Concept of relation: classes, graphing, inverse.	16	.4	.6	1.1	1.1	.9	.9	1.7	1.6	10
Concept of function: notation and evaluation of functional values.	20	.6	.7	1.8	1.0	1.5	1.1	2.4	1.6	16
Composition and combinations of functions.	4	.1	.3	.7	1.3	.5	1.1	1.2	1.7	4
Ratio and proportion.	24	1.5	.8	2.4	1.1	2.3	1.0	3.1	1.3	20

TABLE 15.60 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Variation (direct, inverse, joint), applications.	10	1.2	.9	1.8	1.4	1.7	1.3	2.4	1.7	8
Binomial Theorem: r^{th} term, applications.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
QUADRATIC FUNCTIONS AND EQUATIONS										
Quadratic function and its properties: parabola, graph, symmetry, intercepts.	64	.4	.7	2.5	.9	.9	1.1	3.1	1.0	22
Inverse of the quadratic function.	10	.0	.0	1.2	1.4	.3	.7	1.5	1.7	4
Maxima and minima problems: graphical, algebraic solutions.	44	.3	.6	2.0	1.0	.7	1.0	2.6	1.3	16
Applications: absolute value, reciprocal, regions, point mappings.	2	.3	.5	.5	1.1	.6	1.2	1.3	1.8	4
Higher degree polynomials: graphs, use of factor theorem and factoring.	24	.3	.7	1.9	1.3	.8	1.1	2.5	1.6	12
Translations of the plane.	2	.0	.0	.2	.7	.0	.0	.3	1.0	0
Quadratic equations: completing the square, formula, problems.	84	.5	.7	2.8	.6	1.0	1.1	3.2	.8	26
Linear-quadratic systems.	32	.4	.7	2.1	1.1	1.0	1.2	2.9	1.1	12
Quadratic inequalities.	6	.0	.0	.8	1.2	.4	1.0	1.0	1.5	4
Applications: non-real roots, related equations such as $4-3x - x = 12$.	30	.3	.6	1.6	1.3	.7	1.1	2.0	1.5	14
Theory of quadratic equations: nature of roots, discriminant.	38	.2	.5	1.9	1.3	.8	1.1	2.5	1.4	18
Theory of quadratic equations: sum and product of roots, applications.	18	.2	.6	1.7	1.5	.5	1.1	2.0	1.7	6

TABLE 15.60 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS		
		ENTRY	EXIT		ENTRY	EXIT				
EXPONENTIAL AND LOGARITHMIC FUNCTIONS										
Exponents: whole numbers, integers, rationals.	74	1.7	.7	3.1	.7	2.4	.8	3.7	.8	48
	38	.6	.8	1.9	1.2	1.0	1.0	2.4	1.5	16
Definition of e^x , a^x , and Laws of exponents.	50	1.6	1.0	3.0	.8	2.1	1.2	3.4	1.0	26
Exponential equations.	22	.5	.8	1.7	1.2	1.2	1.1	2.5	1.5	18
Use of exponential tables.	50	.6	.9	2.7	1.1	.9	1.1	3.0	1.2	20
Logarithm: definition, relation to exponential.	62	.4	.7	2.6	1.0	.9	1.1	3.1	1.0	30
Laws of logarithms.	58	.6	.9	2.9	.8	1.1	1.2	3.5	.9	24
Computations with logarithms.	74	.5	.8	3.1	.7	1.1	1.2	3.5	.7	28
Natural logarithms.	6	.2	.4	.9	1.4	.7	1.1	1.2	1.7	8
Logarithmic equations.	8	.1	.3	.9	1.2	.3	.9	1.9	1.4	4
Discussion and graphing of exponential and logarithmic functions, semi-logs.	4	.2	.4	.6	1.0	.7	1.1	1.1	1.5	6
Applications in business and/or technology (growth and decay)	8	.1	.3	.8	.9	.5	1.0	1.8	1.4	4
Operation and use of slide rule.	12	1.1	.8	1.6	1.3	1.6	1.3	2.4	1.7	8
Operation and use of calculators.	14	1.3	1.0	2.5	1.5	2.4	1.1	3.2	1.3	14

TABLE 15.60 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
<u>SEQUENCES AND SERIES</u>										
Sequences: definitions, general term, graphs, limits.	84	.2	.5	2.7	.7	.6	.9	3.2	.8	24
Applications: A.P., G.P., Fibonacci	62	.2	.5	2.8	.7	.7	.9	3.3	.8	20
Series: definitions, notation, first n terms.	80	.2	.5	2.7	.7	.6	1.0	3.3	.7	20
Formulae: A.P., G.P., convergent geometric.	52	.2	.6	2.5	.8	.6	1.0	3.1	1.1	16
Mathematical induction.	0	.0	.0	.0	.0	.1	.4	.3	.7	2
<u>ANALYTIC GEOMETRY AND VECTORS</u>										
Idea of locus, applications.	2	.3	.7	.5	.9	.6	1.1	.9	1.5	4
<u>The Straight Line</u>										
Derivation of various forms of the equation: two points, slope and point, intercepts, etc.	16	1.3	1.0	2.0	1.3	2.1	1.6	2.5	1.8	16
Identifying, constructing and graphing a straight line from given data.	16	1.6	1.1	2.3	1.2	2.0	1.6	2.6	1.7	10
Use of experimental data to obtain best straight line, interpolation.	0	.3	.8	.3	.8	.3	.8	.6	1.0	2
Cartesian 3-space and applications.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
<u>Circle and Sphere</u>										
Equation of circle and basic properties (symmetry, chords, intersection).	22	.6	.7	1.8	1.3	.9	1.0	2.2	1.6	10
Tangents to a circle, a sphere, applications.	6	.1	.3	.9	1.5	.3	.7	1.1	1.7	4

TABLE 15.60 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTIONS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Parabola, Ellipse and Hyperbola										
Conic sections in the environment.	18	.3	.6	1.3	1.4	.6	.9	1.7	1.5	6
Construction techniques, curve stitching; basic vocabulary.	16	.4	.6	1.4	1.4	.6	1.0	1.8	1.7	6
Definitions, equations in standard positions and forms, properties, problems.	22	1.1	.5	1.7	1.3	.5	.9	2.1	1.5	8
Linear-quadratic systems of equations.	14	.2	.6	1.7	1.7	.7	1.1	2.3	2.0	8
Problems and applications.	14	.4	.7	1.5	1.4	.8	1.0	1.9	1.8	8
Use of transformations.	2	.1	.4	.6	1.5	.1	.4	.6	1.5	0
Vectors in 3-Space										
Coordinates, ordered triples, models, equal vectors.	6	.3	.7	.8	1.2	.4	1.0	.9	1.4	2
Addition, scalar multiplication, problems.	4	.1	.4	.5	.9	.1	.4	.6	1.2	0
SYNTHETIC GEOMETRY										
Idea of locus, applications.	2	.3	.8	.7	1.3	.3	.8	.7	1.3	0
Circle: definition, basic terminology and formulae.	10	1.0	1.2	2.1	1.5	1.6	1.4	2.7	1.9	8
Circle: chord, angle, secant, tangent properties.	4	.8	1.2	1.5	1.7	1.3	1.6	1.9	2.0	4
Sphere: definition, formulae, properties.	4	.4	.7	1.1	1.4	1.1	1.6	1.6	1.8	6
Applications of vectors, transformations to loci, circle and sphere.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Famous problems of geometry: nine-point circle, etc.	0	.0	.0	.0	.0	.0	.0	.0	.0	0

TABLE 15.60 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

[illegible]

TABLE 15.60 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		ENTRY	EXIT		ENTRY	EXIT				
			MEAN	S.D.		MEAN	S.D.		MEAN	S.D.
<u>Complex numbers</u>										
In rectangular form $(x + iy)$.	4	.0	.0	.4	.9	.0	.0	.7	1.2	0
In polar form $[(r, \theta)$ or $r(\cos \theta + i \sin \theta)]$.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
In exponential form (r, i) .	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Applications: A.C. circuits, etc.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
<u>Statics</u>										
Moments of forces.	14	.3	.9	1.6	1.4	.5	1.0	1.9	1.5	2
Centres of gravity.	8	.2	.6	1.3	1.4	.5	.9	1.6	1.6	4
Friction.	2	.3	.8	.7	1.3	.6	1.0	1.1	1.6	2
<u>CALCULUS</u>										
Limits.	2	.1	.4	.7	1.5	.1	.4	.7	1.5	0
Δ - Process and slope.	2	.2	.4	.5	1.2	.2	.4	.5	1.2	0
Derivatives of polynomials.	2	.0	.0	.7	1.6	.0	.0	.7	1.6	0
Derivatives of algebraic expressions, requiring application of product, quotient or power rules.	0	.0	.0	.0	.0	.0	.0	.8	1.8	0
Applications of differentiation: maxima and minima problems, curve sketching.	2	.0	.0	.5	1.2	.0	.0	1.2	1.8	0
Applications of differentiation: geometry, related rates.	2	.0	.0	.5	1.2	.0	.0	1.3	2.1	0
Derivatives of transcendental (trig, exp, log) functions.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Applications involving transcendental functions.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Differentials and inverse differentiation.	0	.0	.0	.0	.0	.0	.0	.4	.9	0
Approximate integration (Trapezoidal rule).	0	.0	.0	.0	.0	.0	.0	.0	.0	0

TABLE 15.61
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		MEAN ^a	S.D.	MEAN	S.D.	ENTRY	S.D.	MEAN	S.D.	
BASIC ARITHMETIC										
Fundamental arithmetic operations with fractions, decimals and integers.	22	3.1	.9	3.7	.7	4.2	.8	4.7	.6	35
Commutative, associative and distributive properties applied to these operations.	12	2.7	1.3	3.1	1.4	3.7	1.7	4.1	1.5	22
Percentage.	8	2.6	1.3	2.9	1.2	3.5	1.3	3.6	1.3	16
Simple and compound interest.	33	1.7	.9	3.1	1.0	2.3	1.2	3.6	.7	18
Measurement: use of exact and approximate numbers (error, precision, accuracy, rounding off).	12	2.4	1.1	2.8	1.0	3.2	1.2	3.5	1.3	20
Scientific notation: conversion to and from.	31	2.7	1.0	3.5	.7	3.2	1.0	3.8	.9	20
Scientific notation: use in computation and estimation.	37	2.4	1.0	3.4	.8	3.0	1.0	3.8	.9	22
Metric system: traditional units and uses.	4	1.6	1.1	2.0	1.2	2.7	1.2	2.9	1.4	12
Metric system - S.I.U.	6	1.3	1.0	1.8	1.0	2.6	1.2	2.7	1.4	12
Pictorial representation of data (bar, line, directed number graphs, histograms, pie charts).	6	1.7	1.1	2.0	1.4	2.4	1.4	2.8	1.6	14
Fundamental operations with integers.	14	3.1	1.3	3.7	1.2	4.1	1.3	4.4	1.3	22
Real numbers (rationals, irrationals, recurring and non-recurring decimals, etc.)	20	2.7	1.1	3.3	1.1	3.5	1.2	3.8	1.1	24

^aThe means in this table are based on a response key which ranges from 0-No Knowledge to 5-Complete mastery; understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.
^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 15.61 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS		
		ENTRY MEAN	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN			
BUSINESS ARITHMETIC										
Home ownership.	2	.5	.6	.8	1.2	.6	1.2	1.6	0	
Municipal Taxation.	0	.2	.5	.2	.5	.3	.3	.5	0	
Foreign exchange	0	.2	.5	.2	.5	.3	.3	.5	0	
Equations of equivalence.	2	.8	.8	1.2	1.6	1.2	1.6	1.4	2.1	2
Ordinary annuities	14	.4	.9	2.1	1.3	.7	1.1	2.5	1.6	4
Annuities due and deferred.	8	.1	.4	1.6	1.4	.7	.8	1.8	1.7	4
Stocks.	0	.2	.5	.2	.5	.3	.5	.3	.5	0
Sinking funds.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Customs duties and excise taxes.	0	.3	.5	.3	.5	.3	.5	.3	.5	0
Bonds and debentures.	0	.3	.5	.3	.5	.3	.5	.3	.5	0
Income tax.	2	1.0	1.0	1.4	1.3	1.2	1.3	1.8	1.8	2
Break-even analysis.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
BASIC ALGEBRA										
Generalized arithmetic: literal notation, idea of variable.	14	3.3	1.2	3.7	1.2	3.9	1.3	4.1	1.3	18
Manipulating, simplifying and evaluating algebraic expressions	39	2.8	.7	3.8	.6	3.7	.8	4.5	.6	37
Linear equations and word problems involving one unknown.	16	2.8	1.0	3.3	1.0	3.6	1.2	4.1	1.1	31
Systems of linear equations in 2 unknowns and applications.	31	2.5	1.0	3.3	1.0	3.3	1.3	4.0	1.2	33
Systems of linear equations in 3 unknowns.	14	1.3	1.0	2.3	1.4	2.7	1.5	3.2	1.6	18

TABLE 15.61 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY	S.D.	MEAN	EXIT	S.D.	ENTRY	S.D.	EXIT	
Solution of linear equations using determinants.	4	.0	.0	.8	1.8	.6	1.1	1.5	2.1	4
Solution of linear equations using matrices.	0	.0	.0	.0	.0	.8	1.6	.8	1.6	2
Linear inequalities and graphical solution of linear programming problems.	12	1.4	1.3	1.9	1.6	1.9	1.6	2.4	2.0	8
Factoring: various types, complex fractions.	55	2.3	.8	3.4	.9	3.0	1.0	4.0	.9	37
Operations with rational algebraic fractions.	31	2.3	.7	3.2	.9	2.9	.9	3.7	1.1	27
Solution of simple rational equations.	20	2.9	.9	3.5	.8	3.4	.9	3.9	.7	20
Operations with radicals and irrationals.	35	2.3	1.0	3.2	1.0	2.8	1.1	3.7	1.1	27
Solution of radical and irrational equations.	49	1.8	1.1	3.0	1.0	2.5	1.2	3.5	1.1	37
Four fundamental operations on polynomials.	24	2.5	1.2	3.3	1.1	3.3	1.3	4.0	1.1	27
Manipulation, rearrangement, evaluation of algebraic formulae.	29	2.4	.7	3.5	.6	3.3	.9	4.1	.8	29
Dimensional analysis: use with formulae and prefixes (e.g., kilo, micro).	0	.6	.8	.6	.8	1.9	1.7	2.0	1.9	6
Concept of relation: classes, graphing, inverse.	67	1.9	.8	3.4	.6	2.5	.9	4.0	.6	35
Concept of function: rotation and evaluation of functional values.	78	1.7	1.0	3.4	.7	2.3	1.2	4.0	.7	41
Composition and combinations of functions.	57	.7	.8	2.8	.9	1.2	1.2	3.3	1.3	29
Ratio and proportion.	24	2.0	.8	2.9	.9	2.9	1.1	3.6	1.3	27

TABLE 15.61 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Variation (direct, inverse, joint), applications.	4	1.4	1.2	1.6	1.4	1.8	1.6	1.9	1.9	10
Binomial Theorem: r^{th} term, applications.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
QUADRATIC FUNCTIONS AND EQUATIONS										
Quadratic function and its properties: parabola, graph, symmetry, intercepts.	96	.8	.9	3.4	.6	1.2	1.1	4.0	.6	27
Inverse of the quadratic function.	73	.2	.6	2.5	1.0	.6	1.0	3.1	1.2	20
Maxima and minima problems: graphical, algebraic solutions.	96	.3	.6	3.0	.7	.6	1.0	3.6	.7	22
Applications: absolute value, reciprocal, regions, point mappings.	51	.7	.8	2.5	1.1	1.0	1.2	3.0	1.3	18
Higher degree polynomials: graphs, use of factor theorem and factoring.	76	1.0	1.0	3.0	.8	1.5	1.3	3.5	.9	33
Translations of the plane.	18	.2	.4	1.8	1.7	.4	.6	1.9	1.7	6
Quadratic equations: completing the square, formula, problems.	92	.7	.8	3.4	.7	1.1	1.1	3.9	.8	29
Linear-quadratic systems.	76	.5	.6	2.7	.9	.8	.9	3.3	.9	18
Quadratic inequalities.	55	.3	.6	2.5	.9	.6	.8	2.9	1.1	16
Applications: non-real roots, related equations such as $4-3x - x = 12$.	78	.7	.9	2.7	.9	1.1	1.2	3.2	.9	22
Theory of quadratic equations: nature of roots, discriminant.	90	.1	.4	3.1	.9	.3	.7	3.6	.8	14
Theory of quadratic equations: sum and product of roots, applications.	86	.2	.5	2.7	.9	.4	.9	3.3	.9	10

TABLE 15. 61 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
<u>EXPONENTIAL AND LOGARITHMIC FUNCTIONS</u>										
Exponents: whole numbers, integers, rationals.	88	2.0	.8	3.4	.7	2.4	.9	4.0	.6	39
Graphs of common exponential functions.	80	.3	.7	2.7	.8	.8	1.0	3.2	.8	24
Definition of e^x , a^x , and Laws of exponents.	78	1.8	.8	3.4	.6	2.2	1.0	3.9	.7	29
Exponential equations.	96	.6	.7	2.9	.7	1.0	1.0	3.4	.6	27
Use of exponential tables.	92	.2	.5	3.2	.7	.4	.9	3.6	.8	16
Logarithm: definition, relation to exponential.	96	.1	.3	3.2	.7	.3	.7	3.6	.7	16
Laws of logarithms.	94	.2	.6	3.2	.6	.4	1.0	3.7	.6	18
Computations with logarithms.	94	.1	.5	3.3	.7	.3	.8	3.7	.7	14
Natural logarithms.	20	.1	.3	1.5	1.6	.1	.3	1.8	1.6	0
Logarithmic equations.	73	.0	.2	2.7	.9	.1	.5	3.0	1.2	6
Discussion and graphing of exponential and logarithmic functions, semi-logs.	43	.0	.0	2.3	1.2	.1	.5	2.8	1.4	4
Applications in business and/or technology (growth and decay)	43	.1	.4	1.9	1.4	.2	.4	2.5	1.5	4
Operation and use of slide rule.	8	.3	.9	1.1	1.3	.6	1.2	2.1	1.8	2
Operation and use of calculators.	8	1.1	1.3	1.6	1.4	1.8	1.8	2.7	1.7	10

TABLE 15.61 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
<u>SEQUENCES AND SERIES</u>										
Sequences: definitions, general term, graphs, limits.	80	.2	.5	3.0	.7	.5	.9	3.5	.7	16
Applications: A.P., G.P., Fibonacci	67	.1	.2	2.8	.9	.3	.7	3.5	.9	10
Series: definitions, notation, first n terms.	76	.0	.2	2.9	.8	.3	.7	3.2	1.0	10
Formulae: A.P., G.P., convergent geometric.	61	.1	.2	2.6	1.1	.2	.6	3.1	1.1	4
Mathematical induction.	4	.0	.0	.6	1.3	.5	.9	1.7	1.9	6
<u>ANALYTIC GEOMETRY AND VECTORS</u>										
Idea of locus, applications.	18	.9	.7	2.0	1.4	1.4	1.1	2.4	1.3	10
<u>The Straight Line</u>										
Derivation of various forms of the equation: two points, slope and point, intercepts, etc.	39	2.3	.9	3.3	.6	2.9	.9	4.2	.5	22
Identifying, constructing and graphing a straight line from given data.	27	2.5	.8	3.4	.7	3.1	1.0	4.0	.8	18
Use of experimental data to obtain best straight line, interpolation.	4	.8	1.0	1.0	1.2	1.2	1.2	2.0	1.2	4
Cartesian 3-space and applications.	4	.4	1.1	.9	1.3	.6	1.8	1.3	1.9	2
<u>Circle and Sphere</u>										
Equation of circle and basic properties (symmetry, chords, intersection).	47	.8	.9	2.8	.9	1.4	1.2	3.6	.8	20
Tangents to a circle, a sphere, applications.	47	.4	.6	2.5	.8	.8	1.0	3.2	.9	18

TABLE 15.61 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTIONS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	MEAN	S.D.	ENTRY	S.D.	MEAN	S.D.	
<u>Parabola, Ellipse and Hyperbola</u>										
Conic sections in the environment.	2	.0	.0	.2	.4	.2	.4	.7	1.0	2
Construction techniques, curve stitching; basic vocabulary.	4	.2	.4	.5	.8	.3	.5	1.2	1.3.	2
Definitions, equations in standard positions and forms, properties, problems.	10	.4	.5	1.5	1.3	.5	.8	2.0	1.7	2
Linear-quadratic systems of equations.	20	.5	.7	2.3	1.5	.6	1.0	2.8	1.6	4
Problems and applications.	14	.3	.5	1.5	1.2	.3	.5	2.4	1.6	0
Use of transformations.	8	.4	.7	1.1	1.4	.4	.7	1.6	1.6	0
<u>Vectors in 3-Space</u>										
Coordinates, ordered triples, models, equal vectors.	2	.4	1.1	.6	1.2	.4	1.1	.8	1.4	0
Addition, scalar multiplication, problems.	2	.4	1.1	.6	1.2	.4	1.1	.8	1.4	0
<u>SYNTHETIC GEOMETRY</u>										
Idea of locus, applications.	22	.7	.9	2.1	1.3	1.0	1.3	2.5	1.4	8
Circle: definition, basic terminology and formulae.	41	1.4	1.0	3.1	.8	1.8	1.2	3.7	.8	12
Circle: chord, angle, secant, tangent properties.	53	.8	.8	2.9	.7	1.4	1.0	3.7	.7	24
Sphere: definition, formulae, properties.	6	.6	1.0	1.1	1.2	.6	1.0	1.5	1.5	0
Applications of vectors, transformations to loci, circle and sphere.	4	.5	.8	1.0	1.6	.6	.9	1.0	1.6	2
Famous problems of geometry: nine-point circle, etc.	2	.1	.4	.4	.8	.1	.4	.6	1.1	0

TABLE 15.61 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Similar figures in 2- and 3-space.	8	1.7	.8	2.3	1.1	2.3	1.1	2.9	1.5	8
Applications of similar figures: mean proportional theorem, etc.	16	1.3	.8	2.3	1.2	1.6	1.1	3.0	1.3	6
Solid geometry: mensuration.	8	1.6	.8	2.3	1.3	2.3	1.4	3.0	1.8	8
Geometries: Euclidean and other.	14	1.5	1.0	2.2	1.2	2.0	1.3	2.6	1.7	10
<u>TRIGONOMETRY, COMPLEX NUMBERS AND STATICS</u>										
<u>Trigonometry</u>										
Primary and reciprocal trigonometric functions (definitions, graphs, properties).	90	1.7	.8	3.5	.6	2.3	.8	4.1	.6	37
Basic identities and expansions.	76	.7	.8	2.9	1.0	1.2	1.1	3.5	1.2	24
Radian measure.	90	1.1	1.0	3.2	.8	1.7	1.2	3.9	.7	33
Amplitude, periodicity, phase shift, and graphing.	76	.5	.8	3.1	.9	.7	1.0	3.5	1.2	14
Solution of equations.	67	.5	.9	2.8	.7	1.0	1.1	3.4	.9	22
Inverses of trigonometric functions.	31	.4	.7	1.6	1.4	.7	1.0	2.2	1.5	12
Applications of linear transformations.	16	.6	.7	1.8	1.8	.7	1.0	2.1	2.0	8
Laws of sines and cosines.	88	1.1	1.0	3.3	.5	1.5	1.3	3.8	.6	29
Solution of right triangle.	84	1.9	1.0	3.6	.7	2.5	1.1	4.1	.6	41
Solution of oblique triangle.	65	.8	.9	3.2	.7	1.2	1.2	3.9	.6	20
Polar coordinates.	2	.0	.0	.2	.6	.0	.0	.0	.0	0

TABLE 15.61 (Cont'd)
SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS		
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.			
<u>Complex numbers</u>										
In rectangular form $(x + iy)$.	24	.0	.0	1.9	1.2	.1	.4	2.3	1.4	4
In polar form $[r, \theta]$ or $r(\cos \theta + i \sin \theta)$	0	.0	.0	.0	.0	.0	.0	.0	.0	0
In exponential form $(re^{i\theta})$	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Applications: A.C. circuits, etc.	2	.0	.0	.2	.5	.0	.0	.2	.4	0
<u>Statics</u>										
Moments of forces	4	.0	.0	.7	1.0	.0	.0	.9	1.5	0
Centres of gravity	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Friction	0	.0	.0	.0	.0	.0	.0	.0	.0	0
<u>CALCULUS*</u>										
Limits	2	.0	.0	.2	.5	.0	.0	.2	.5	0
Applications of differentiation: maxima and minima problems, curve sketching	2	.0	.0	.8	1.5	.0	.0	.4	1.1	0
<u>STATISTICS AND PROBABILITY</u>										
Statistics: uses, data gathering, representation and interpretation	2	.0	.0	.5	1.0	.5	1.0	1.3	1.5	2
Descriptive statistics: mean, median, mode, standard deviation	0	.3	.6	.3	.6	.7	1.2	1.0	1.7	2

* Under the Calculus and Statistics and Probability headings only those few topics taught in Year 4 Advanced Course have been included in this table.

TABLE 15.62

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS & FUNCTIONS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS ^b %	
		ENTRY MEAN ^a	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN		
<u>RELATIONS AND FUNCTIONS</u>									
Function as a mapping	88	1.8	.8	3.3	2.3	.7	3.8	.6	47
Inverse of a function	92	1.5	.9	3.3	1.9	.7	3.8	.7	39
Graphs and properties of second degree relations using previously known skills	88	2.0	.9	3.5	2.4	.6	4.1	.6	35
Equations and graphs of conics using focus-directrix definitions	94	.1	.3	3.2	.4	.5	3.9	.5	22
Equations of conics in non-standard positions	96	.2	.5	3.1	.3	.5	3.6	.6	14
Applications	84	.4	.6	2.9	.5	.8	3.5	.9	12
Intersections of lines and conics; e.g., tangents	92	1.0	.9	3.3	1.4	.6	4.0	.7	29
Intersection of conics and conics	92	.5	.7	3.1	.7	.8	3.7	.9	18
Domain, range and graph of basic trigonometric functions	82	2.0	.8	3.3	2.4	.6	4.0	.6	43

^aThe means in this table are based on a response key which ranges from 0-No Knowledge to 5 Complete mastery; understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 15.62 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS & FUNCTIONS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF " AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Standard trigonometric formulae and applications	90	1.3	1.0	3.4	.5	1.8	1.1	4.1	.5	41
Trigonometric identity problems and equations	92	1.4	.9	3.2	.7	1.7	.8	4.0	.6	29
Phase shift, period and amplitude	82	1.7	1.1	3.4	.7	2.1	1.0	4.0	.7	31
Translations of the plane	96	.7	.8	3.5	.7	1.0	1.0	4.1	.7	27
Rotations of the plane	94	.4	.8	3.2	.6	.7	1.0	4.0	.8	18
Reflections of the plane	94	.7	.8	3.3	.7	1.0	.9	4.0	.7	27
Study of general conic	80	.3	.8	3.0	.9	.6	.9	3.8	.9	20
SOME COMMON TOPICS										
Mathematics of Investment										
Compound interest and annuities	33	.9	.7	3.3	.6	1.2	.9	3.8	.5	8
Present value	33	.4	.5	3.2	.5	.8	.8	3.8	.5	10
Instalment buying and mortgages	31	.5	.5	3.3	.6	.9	1.0	3.7	.6	10
Bonds	20	.4	.5	3.2	.6	.9	.9	3.6	.7	8
PROBABILITY AND STATISTICS										
Simple data collection and representation	27	.8	.7	3.3	.8	1.0	.7	3.9	1.0	6
Grouped data, histograms frequency polygons	27	.6	.7	3.3	.8	.9	.7	3.8	.9	6
Measures of central tendency	27	.5	.7	3.2	.8	.5	.7	3.8	1.0	4
Measures of dispersion	20	.2	.4	3.1	.9	.3	.5	3.7	1.2	2
										455

TABLE 15.63

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY MEAN ^a	S.D.	MEAN	EXIT S.D.	ENTRY MEAN	S.D.	MEAN	EXIT S.D.	
CALCULUS										
Elementary Approach Topics										
Limit of a function: intuitive approach via sequences and series	100	.4	.7	3.0	.6	.8	.9	3.6	.6	31
Rate of change: slopes, secants, tangents	98	.9	.9	3.4	.6	1.2	1.0	3.9	.6	24
Derivations of powers, products, and quotients	100	.0	.2	3.7	.7	.1	.3	4.2	.6	2
Other derivatives: function of a function, trig functions	98	.0	.1	3.4	.6	.1	.3	3.9	.7	4
Applications of derivatives to tangents to curves	100	.1	.4	3.4	.6	.2	.5	3.8	.6	6
Further applications: velocity, acceleration	98	.4	.6	3.2	.7	.6	.9	3.9	.6	22
Second derivative and its use, curve-tracing	100	.0	.2	3.1	.6	.1	.3	3.7	.6	4
Maxima and minima problems	100	.6	.6	3.1	.6	.7	.8	3.9	.6	12
Rate of change problems	100	.2	.5	3.0	.5	.3	.6	3.8	.6	10

^aThe means in this table are based on a response key which ranges from 0-No Knowledge to 5-Complete mastery; understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 15.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
	ENTRY MEAN	S.D.	EXIT MEAN	S.D.	ENTRY MEAN	S.D.	EXIT MEAN	S.D.	
Differential equations; anti-derivatives applied to curves and motion	.0	.1	2.9	1.0	.1	.3	3.5	.9	6
Areas between curves and axes	.1	.3	3.1	.8	.2	.4	3.6	.9	8
Areas enclosed between curves	.1	.2	3.0	.9	.1	.3	3.6	.9	8
Volumes of rotation	.0	.2	2.3	1.2	.1	.2	3.0	1.2	4
Integration using numerical methods	.0	.0	1.6	1.3	.1	.4	2.6	1.6	6
Applications involving complex numbers and/or polar coordinates	.1	.3	1.7	1.5	.2	.5	2.6	1.5	10
<u>Advanced Approach Topics</u>									
The real numbers; axioms, least upper bound, completeness	.2	.4	.6	1.2	.2	.4	.9	1.2	2
Proof by induction	.3	.8	1.1	1.6	.3	.8	1.8	1.7	2
Inequalities	1.2	1.1	2.0	1.4	1.4	1.3	2.7	1.6	12
Notation	.6	.9	2.4	1.4	.7	1.3	3.0	1.6	4
Motivation, historical introduction	.1	.3	1.3	1.3	.1	.3	1.7	1.5	0
Definition and algebra of limits	.0	.0	1.9	1.1	.1	.3	2.5	1.4	4
Functions: definition algebra, composition, inverse	1.2	1.2	2.3	1.4	1.5	1.4	3.2	1.1	12

TABLE 15.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.
Continuity: definition, algebra of continuous functions	37	.2	.4	1.9	.9	.3	.6
<u>Theorems on continuous functions</u>							
Intermediate value	0	.0	.0	.0	.0	.1	.3
Extreme value	0	.0	.0	.0	.0	.1	.3
<u>Derivatives</u>							
Definition and algebra of derivatives	71	.1	.2	3.2	1.0	.1	.4
Chain rule	86	.0	.0	3.5	.7	.1	.3
Derivatives of elementary functions	82	.0	.2	3.7	.7	.1	.4
<u>Theorems on differentiation</u>							
Rolle	2	.0	.0	.1	.3	.0	.0
Mean value	4	.0	.0	.2	.4	.0	.0
<u>Applications of differentiation</u>							
Related rates	73	.2	.4	2.8	.7	.2	.5
Optimization	41	.2	.5	2.2	1.4	.2	.5
Graph sketching	78	.7	.9	3.1	.6	.8	1.0
Scientific examples	31	.3	.6	1.8	1.3	.5	.8
l'Hopital's Rule to limits	6	.0	.0	.5	1.1	.0	.0

TABLE 15.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	ENTRY	MEAN	S.D.	EXIT		
<u>Integration</u>									
Definition of integral and algebraic integration	61	.1	.6	2.6	1.0	.2	.6	3.0	1.4
Fundamental Theorem of calculus	41	.2	.8	1.9	1.5	.1	.6	2.3	1.5
Mean value theorem (MVT)	2	.0	.0	.2	.8	.0	.0	1.0	1.4
Application of MVT to approximation	2	.0	.0	.2	.8	.0	.0	.9	1.4
<u>Techniques of integration</u>									
Substitution	67	.2	.8	2.8	1.1	.2	.7	3.2	1.2
Trigonometric substitution	47	.3	.9	2.1	1.2	.2	.8	3.1	1.2
Parts	47	.0	.2	2.2	1.3	.1	.3	2.8	1.4
Partial fractions	47	.1	.3	2.4	1.5	.1	.3	2.9	1.5
<u>Applications of integration</u>									
Area	73	.1	.3	3.0	.8	.1	.4	3.5	.8
Volume	49	.1	.3	2.3	1.1	.1	.4	3.0	1.1
Work	18	.2	.5	1.2	1.4	.2	.5	2.0	1.9
Arc length	22	.1	.4	1.5	1.5	.2	.4	1.9	1.8
Improper integrals	6	.0	.0	.5	1.1	.1	.3	1.2	1.6
Taylor's theorem	6	.0	.0	.5	1.1	.0	.0	1.3	1.8
Logarithmic and exponential functions	51	.3	.5	2.6	1.2	.3	.7	3.0	1.5

TABLE 15.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	EXIT	MEAN	S.D.	EXIT		
Hyperbolic function	4	.0	.0	.4	1.2	.1	1.1	1.4	2
<u>Sequences and series</u>									
Definition and algebra of limits	41	.2	.5	2.3	1.1	.3	2.7	1.1	4
Absolute convergence	6	.1	.3	.4	.6	.1	1.0	1.1	0
Conditional convergence	4	.0	.0	.2	.6	.0	.8	1.1	0
Basic convergence tests (e.g., ratio, root, integral, monotone)	0	.0	.0	.0	.0	.0	.7	1.3	0
Power series	8	.1	.5	.8	1.3	.1	1.5	1.6	0
<u>Elementary differential equations</u>									
Separation of variables	10	.0	.0	.9	1.3	.1	1.3	1.6	2
General linear first order	12	.0	.0	.9	1.3	.1	1.5	1.6	2
Partial derivatives	2	.0	.0	.3	.9	.0	.6	1.3	0
Gradient	0	.0	.0	.0	.0	.0	.5	1.0	0
Multiple integration	4	.0	.0	.4	1.0	.0	.8	1.2	0
Parametric curves	4	.1	.5	.3	.8	.1	.6	1.1	2
Curvature	0	.0	.0	.0	.0	.0	.5	1.0	0
Mathematical Modelling	2	.0	.0	.2	.6	.0	.8	1.2	0

TABLE 15.64

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS ^b %
		MEAN ^a	ENTRY	EXIT	MEAN	ENTRY	EXIT	
ALGEBRA								
Sets, subsets								
Definition and laws of combinations	84	1.1	.9	3.2	.6	1.2	1.0	3.6 .7 14
Fundamental counting principles	84	.5	.8	3.1	.8	.7	.9	3.6 .8 20
Permutations	88	.2	.7	3.1	.5	.4	.8	3.8 .8 14
Combinations	88	.2	.7	3.2	.5	.4	.8	3.8 .6 14
Mathematical induction								
Method; use with properties of sigma notation	90	.3	.7	3.2	.6	.5	.8	3.8 .7 14
Applications and counterexamples	92	.1	.3	3.1	.6	.2	.6	3.7 .8 10
Binomial Theorem	90	.2	.5	3.4	.6	.5	.7	4.0 .6 18
Vectors								
Definition and properties	98	1.1	.7	3.7	.7	1.4	.8	4.2 .6 26
Geometric uses	94	.8	.8	3.2	.8	1.1	.9	3.9 .7 32
Vectors as ordered pairs, ordered triplets	96	.7	.9	3.7	.7	.9	1.0	4.1 .6 18
Linear combinations of vectors	98	.1	.4	3.2	.7	.3	.6	3.9 .6 10
Definition, formulae and algebraic properties of dot product	98	.0	.2	3.4	.6	.1	.5	3.9 .6 6

^a The means in this table are based on a response key which ranges from 0-No knowledge to 5-Complete mastery; understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details

^b The figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students actually have.

TABLE 15.64 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Projections, unit vectors, applications to physics	96	.3	.5	3.0	.6	.4	.7	3.7	.8	10
Equations of lines										
Vector and linear equations in 2-space	98	.4	.6	3.6	.6	.4	.7	4.1	.7	4
Vector and parametric equations in 3-space	98	.0	.2	3.5	.7	.2	.5	4.0	.7	8
Direction angles, cosines, and numbers	98	.1	.2	3.2	.7	.1	.5	3.8	.8	4
Equations of planes										
Vector, parametric, and linear equations in 3-space	98	.1	.2	3.3	.6	.1	.5	4.0	.6	2
Solution sets of 2 or 3 linear equations	94	1.0	1.0	3.7	.6	1.2	1.2	4.3	.7	16
Systems of linear equations										
<u>m</u> equations in <u>n</u> unknowns	80	.7	.8	3.2	.9	.8	.9	3.6	1.0	8
Augmented matrix; row reduced echelon form	88	.1	.3	3.3	.6	.1	.4	3.8	.6	6
Solutions in parametric form	84	.1	.4	3.1	.8	.2	.5	3.7	.8	8
Consistency and inconsistency	86	.4	.6	3.3	.8	.6	.7	3.7	.8	16
SOME COMMON TOPICS										
Matrices and linear transformations										
Matrices: definitions, equations, properties	70	.2	.2	3.3	.6	.5	.7	3.9	.7	20

TABLE 15.64 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	ENTRY	MEAN	S.D.	EXIT		
Linear transformations: examples, dot product, etc.	52	.3	.6	2.9	1.0	.4	.8	3.6	1.0
Linear transformations: propert- ies, A^{-1} , non-invertible matrices	58	.1	.4	2.9	1.0	.2	.6	3.5	1.1
Groups, Rings and Fields									
Definition; study and uses of typical groups, e.g. symmetry	22	.4	.6	2.2	1.6	.6	.6	2.6	1.8
Number systems and sets of functions as groups	22	.4	.7	2.1	1.5	.5	.6	2.5	1.7
Permutations	20	.1	.4	2.1	1.5	.3	.5	2.3	1.6
Group properties of 2×2 matrices	18	.5	1.0	2.2	1.7	.5	1.0	2.4	1.9
Transformations of a regular tetrahedron and cube	10	.1	.3	1.5	1.7	.2	.4	1.7	1.8
Characteristic properties and examples of rings and fields	18	.2	.4	2.0	1.5	.3	.5	2.2	1.6
Complex Numbers									
Definitions and field properties	34	.5	1.0	2.9	1.3	.7	1.2	3.5	1.5
Solutions of quadratic equations	38	1.4	1.2	3.4	1.3	1.6	1.4	3.9	1.4
Geometric and polar forms	36	.1	.2	2.8	1.6	.1	.3	3.5	1.6
De Moivre's theorem	34	.0	.0	2.6	1.5	.0	.0	3.4	1.6

TABLE 15.64 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		MEAN	S.D.	ENTRY EXIT MEAN	ENTRY EXIT MEAN	S.D.	S.D.			
<u>Polar Coordinates</u>										
Correspondence and conversion between rectangular, polar, and vector descriptions of point P	24	.0	.0	2.4	1.7	.1	.3	2.9	1.7	2
Graphing	18	.0	.0	1.9	1.5	.0	.0	2.6	1.6	0
<u>Logical Reasoning</u>										
Statements, sentences, three basic connectives	14	.3	.5	2.2	1.4	.4	.5	2.7	1.8	2
Logical connectives and quantifiers and use in proof and disproof	18	.0	.0	2.4	1.2	.2	.4	3.0	1.4	4
<u>PROBABILITY AND STATISTICS</u>										
Sample spaces and events	28	.5	.6	3.0	1.2	.7	.8	3.6	1.2	4
Probability of an event	28	.7	.5	3.1	1.2	1.0	.7	3.6	1.2	6
Complementary and mutually exclusive events	28	.1	.4	2.6	.9	.3	.6	3.3	1.1	4
Conditional probability and independence	20	.0	.0	2.2	1.1	.3	.7	2.9	1.4	6

TABLE 16.1
COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																						TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	TOTAL	
Teaching at community college	0	0	0	0	0	0	3	3	2	4	1	0	0	0	1	0	0	0	0	0	0	14	
Teaching this course (or its equivalent)	0	3	0	0	0	4	1	4	0	1	1	0	0	0	0	0	0	0	0	0	0	14	
Related professional (non-teaching) Experience	5	0	1	1	1	4	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	14	

TABLE 16.2
COLLEGE OF APPLIED ARTS AND TECHNOLOGY
BUSINESS MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	2	14
Elementary	0	0
Secondary	6	43
University	4	29
Other	0	0
More than one other	2	14
Total	14	100

TABLE 16.3
COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS																					TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20+	
Teaching at community college	0	0	2	0	1	3	5	4	14	8	2	1	1	0	1	0	0	0	0	0	1	43
Teaching this course (or its equivalent)	0	2	4	5	5	8	3	5	3	2	0	0	0	0	0	0	0	0	1	0	0	43
Related professional (non-teaching) Experience	9	3	4	5	1	2	1	0	3	1	7	0	2	1	0	0	0	0	0	0	4	43

TABLE 16.4
COLLEGE OF APPLIED ARTS AND TECHNOLOGY
TECHNICAL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	10	24
Elementary	0	0
Secondary	10	24
University	8	20
Other	7	16
More than one other	7	16
Total	42	100

TABLE 16.5

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
Doctorate	1	7	2	5
Master's	8	57	11	27
Honour Bachelor's (4 year)	3	22	17	41
Bachelor's	1	7	7	17
Post-Secondary Diploma	0	0	2	5
Other	1	7	2	5
Total	14	100	41	100

TABLE 16.6

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
TEACHER'S POSITION IN SCHOOL

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
Teaching Master	14	100	43	100
Instructor	0	0	0	0
Counsellor	0	0	0	0
Other	0	0	0	0
Total	14	100	43	100

TABLE 16.7

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS THE COURSE IDENTIFIED ON THIS QUESTIONNAIRE
IN YOUR AREA OF SPECIALIZATION?"

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
Yes, it is my area	5	36	21	50
Yes, it is closely related	7	50	18	43
No	2	14	3	7
Total	14	100	43	100

TABLE 16.8
COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interests of students	3	22	7	50	2	14	2	14	14
Knowledge of subject of incoming students	7	50	4	29	2	14	1	7	14
Relationship between this course and others taken concurrently	3	22	9	64	1	7	1	7	14
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	5	36	8	57	1	7	-	-	14
Ontario Ministry of Education guidelines	-	-	1	10	-	-	9	90	10
Course outline assigned to you	8	62	2	15	-	-	3	23	13
Special interests or training you might have	2	14	3	21	6	43	3	21	14
Content and approach of principal text(s)	5	42	2	16	5	42	-	-	12
Staffing	2	29	2	29	-	-	3	42	7
Other	-	-	1	14	-	-	6	86	7

TABLE 16.9
COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Interest of students	8	19	14	34	13	32	6	15	41
Knowledge of subject of incoming students	22	51	11	26	4	9	6	14	43
Relationship between this course and others taken concurrently	21	49	16	37	2	5	4	9	43
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	19	44	17	40	4	9	3	7	43
Ontario Ministry of Education guidelines	-	-	4	13	6	19	21	68	31
Course outline assigned to you	26	65	9	22	2	5	3	8	40
Special interests or training you might have	9	21	13	31	11	27	9	21	42
Content and approach of principal text(s)	5	12	20	48	13	31	4	9	42
Staffing	4	12	5	16	1	3	22	69	32
Other	4	13	-	-	-	-	28	87	32

TABLE 16.10

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "ARE THERE FORMAL OR STRONGLY RECOMMENDED
 PREREQUISITES FOR THIS COURSE?"

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
Yes	6	43	36	84
No	8	57	7	16
Total	14	100	43	100

TABLE 16.11

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
Excellent	-	-	-	-
Good	1	7	6	14
Fair	12	86	24	56
Poor	1	7	13	30
Total	14	100	43	100

TABLE 16.12

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "TO WHAT EXTENT DO YOU FIND VARIATION
 IN COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
A great deal	12	86	36	84
A moderate amount	2	14	6	14
Very little	-	-	1	2
Do not know	-	-	-	-
Total	14	100	43	100

TABLE 16.13

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "TO WHAT EXTENT DOES THIS COURSE ALLOW
 STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
Great extent	3	21	4	9
Moderate extent	3	21	2	5
Small extent	2	15	15	35
Not at all	6	43	22	51
Total	14	100	43	100

TABLE 16.14

COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
 EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	4	29	2	14	2	14	-	-	3	21	1	7	2	14	-	-	14	24.1	21.2
Socratic (question and answer technique, interaction between students and instructor)	5	36	2	14	4	29	1	7	1	7	1	7	-	-	-	-	14	14.1	14.6
Practically-oriented work -computers, laboratory work, experiments	11	79	1	7	1	7	-	-	-	-	-	-	1	7	-	-	14	6.4	15.9
Small group activities (with the instructor supervising a number of small groups at the same time)	9	65	2	14	2	14	1	7	-	-	-	-	-	-	-	-	14	5.4	8.3
Seminar, tutorial (with or without additional instructors; this technique may include student presentations)	8	58	2	14	2	14	2	14	-	-	-	-	-	-	-	-	14	7.9	10.6
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor, including library or resource centre activity.)	5	36	3	21	3	21	1	7	1	7	1	7	-	-	-	-	14	13.2	14.8
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	10	72	-	-	-	-	1	7	-	-	1	7	1	7	1	7	14	17.8	31.3
Testing	1	7	10	72	2	14	1	7	-	-	-	-	-	-	-	-	14	10.7	6.7
Audiovisual (television, tapes, films, radio, etc.)	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	0.0	0.0
Other	12	86	2	14	-	-	-	-	-	-	-	-	-	-	-	-	14	0.4	1.3

TABLE 16.15

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
 EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Lecture (with or without provision for student questions)	6	14	6	14	9	21	8	18	5	12	5	12	3	7	1	2	43	26.1	20.5
Socratic (question and answer technique, interaction between students and instructor)	8	19	10	23	12	28	4	9	5	12	3	7	1	2	-	-	43	18.4	15.4
Practically-oriented work - computers, laboratory work, experiments	28	65	7	16	4	10	2	5	1	2	1	2	-	-	-	-	43	6.6	11.5
Small group activities (with the instructor supervising a number of small groups at the same time)	34	79	7	17	1	2	-	-	1	2	-	-	-	-	-	-	43	2.2	6.0
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	29	67	8	19	4	9	2	5	-	-	-	-	-	-	-	-	43	4.2	7.4
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor, including library or resource centre activity)	10	23	11	26	12	28	4	9	2	5	3	7	1	2	-	-	43	16.5	15.8
Individualized instruction (each student proceeds at his own speed, e.g. programmed learning, learning modules)	21	49	11	25	2	5	2	5	2	5	1	2	3	7	1	2	43	12.9	21.3
Testing	1	2	26	60	14	33	2	5	-	-	-	-	-	-	-	-	43	11.6	5.9
Audiovisual (television, tapes, films, radio, etc.	40	93	2	5	1	2	-	-	-	-	-	-	-	-	-	-	43	0.5	1.9
Other	42	98	-	-	-	-	1	2	-	-	-	-	-	-	-	-	43	0.6	3.8

TABLE 16.16
COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO STUDENTS
USE THE FOLLOWING RESOURCES"

	Great			Moderate			Small			Not At			TOTAL
	N	%	Extent	N	%	Extent	N	%	Extent	All	N	%	
Main text	9	64	1	7	-	-	-	-	-	4	29		14
Main text plus supplementary text(s)	1	8	-	-	4	33	7	59					12
Two or more main texts or materials from other texts	1	8	1	8	2	17	8	67					12
Mimeographed materials (lecture notes, etc.)	5	36	2	14	4	29	3	21					14
Reference books, dictionaries, encyclopedia, journals, etc.	-	-	-	-	2	17	10	83					12
Individualized learning packages	4	29	-	-	-	-	10	71					14
Laboratory and/or computer equipment	2	15	-	-	2	15	9	70					13
Audiovisual media (television, tapes, film strips, etc.)	-	-	-	-	-	-	14	100					14
Other	1	9	1	9	-	-	9	82					11

TABLE 16.17
 COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "TO WHAT EXTENT DO STUDENTS
 USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		TOTAL
	N	%	N	%	N	%	N	%	
Main text	27	63	9	21	2	5	5	11	43
Main text plus supplementary text(s)	1	2	5	12	11	27	24	59	41
Two or more main texts or materials from other texts	1	3	3	7	9	22	28	68	41
Mimeographed materials (lecture notes, etc.)	10	23	15	35	10	23	8	19	43
Reference books, dictionaries, encyclopedias, journals, etc.	-	-	1	3	11	26	30	71	42
Individualized learning packages	6	14	2	5	12	28	23	53	43
Laboratory and/or computer equipment	-	-	4	10	9	21	29	69	42
Audiovisual media (television, tapes, film strips, etc.)	-	-	1	2	4	9	38	89	43
Other	2	5	-	-	-	-	37	95	39

TABLE 16.18

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
 STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
0%*	-	-	2	5
1-25%	-	-	4	9
26-50%	4	29	10	23
51-75%	2	14	2	5
76-100%	5	36	20	47
101-150%	1	7	4	9
151-200%	1	7	1	2
201+%	1	7	-	-
Total	14	100	43	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 16.19

COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
 WRITING THE FINAL EXAMINATION?"

	YEAR 1 BUSINESS		YEAR 1 TECHNICAL	
	N	%	N	%
Yes	2	14	14	33
No	5	36	14	33
Not applicable	7	50	15	34
Total	14	100	43	100

TABLE 16.20
COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	9	64	-	-	-	-	1	7	3	21	1	7	-	-	-	-	14	13.9	19.3
Mid-term examination(s)	11	79	-	-	1	7	2	14	-	-	-	-	-	-	-	-	14	5.4	10.4
Other written tests	-	-	-	-	-	-	3	21	2	14	1	7	1	7	7	50	14	67.9	29.8
Other oral tests	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	0.0	0.0
Individual papers (essays, reports, etc.)	12	86	-	-	1	7	1	7	-	-	-	-	-	-	-	-	14	3.6	9.0
Individual projects (e.g., oral presentations)	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14	0.4	1.3
Group or team papers, projects	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	0.0	0.0
Problems, exercises	10	71	3	22	1	7	-	-	-	-	-	-	-	-	-	-	14	3.6	6.1
Notebooks	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	0.0	0.0
Laboratory and/or other class participation	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	0.0	0.0
Effort	10	71	4	29	-	-	-	-	-	-	-	-	-	-	-	-	14	2.2	4.1
Attendance	13	93	1	7	-	-	-	-	-	-	-	-	-	-	-	-	14	0.4	1.3
Other	9	64	5	36	-	-	-	-	-	-	-	-	-	-	-	-	14	0.6	1.3

*When respondents indicated that students could be exempted from their final examinations, the final mark allocated was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 16.21

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
 TEACHERS' RESPONSE TO QUESTIONNAIRE ITEM -
 "ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
 NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	30	70	-	-	2	5	6	14	1	2	2	5	1	2	1	2	43	11.8	21.4
Mid-term examination(s)	36	84	-	-	3	7	1	2	1	2	1	2	1	2	-	-	43	5.3	13.6
Other written tests	5	12	-	-	3	7	-	-	6	14	2	5	11	25	16	37	43	60.1	31.7
Other oral tests	43	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	0.0	0.0
Individual papers (essays, reports, etc.)	39	91	2	5	1	2	-	-	1	2	-	-	-	-	-	-	43	1.9	6.9
Individual projects (e.g., oral presentations)	42	98	1	2	-	-	-	-	-	-	-	-	-	-	-	-	43	0.2	1.5
Group or team papers, projects	42	98	1	2	-	-	-	-	-	-	-	-	-	-	-	-	43	0.2	1.5
Problems, exercises	25	58	8	19	8	19	2	4	-	-	-	-	-	-	-	-	43	6.6	9.1
Notebooks	43	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	0.0	0.0
Laboratory and/or class participation	41	95	2	5	-	-	-	-	-	-	-	-	-	-	-	-	43	0.3	1.7
Effort	37	86	6	14	-	-	-	-	-	-	-	-	-	-	-	-	43	0.9	2.5
Attendance	39	91	4	9	-	-	-	-	-	-	-	-	-	-	-	-	43	0.8	2.5
Other	31	72	9	21	-	-	-	-	-	-	-	-	2	5	1	2	43	5.5	19.2

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 16.22
COLLEGE OF APPLIED ART AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use and understand fundamental terminology	4	29	7	50	2	14	1	7	14	2.0	0.8
Conceptual and practical tools for mathematical application	9	64	5	36	-	-	-	-	14	2.6	0.5
Skills needed for further courses or work in mathematics	8	57	3	22	2	14	1	7	14	2.3	1.0
Ability to apply knowledge and skills to other subject areas or situations	5	36	7	50	2	14	-	-	14	2.2	0.7
Skills related to subsequent occupations	5	36	6	43	3	21	-	-	14	2.1	0.7
Sound and systematic study habits	1	8	5	38	7	54	-	-	13	1.5	0.6
Ability to work independently	5	38	5	38	3	24	-	-	13	2.2	0.8
Ability to assess own skills and abilities	1	7	4	31	4	31	4	31	13	1.2	0.9
Ability to estimate an answer	3	21	8	58	3	21	-	-	14	2.0	0.7
Ability to check the reasonableness of an answer	4	29	10	71	-	-	-	-	14	2.3	0.5
Ability to construct, use and interpret concrete models and mathematical diagrams	2	15	5	39	4	31	2	15	13	1.5	0.9
Ability to understand a problem stated in English and translate it into mathematical language to solve it	7	54	4	31	2	15	-	-	13	2.4	0.7
Ability to use symbolic notation	2	15	4	31	6	46	1	8	13	1.5	0.8
Ability to read a mathematical text book	1	7	2	14	7	50	4	29	14	1.0	0.8

TABLE 16.22 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INDICATE THE DEGREE OF EMPHASIS GIVEN

TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little		No		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Familiarity with basic literature and use of resources (library, texts, other students and colleagues)	-	-	2	17	4	33	6	50	12	0.7	0.7
Ability to write a proof	-	-	1	8	2	15	10	77	13	0.3	0.6
Ability to make and test generalizations	-	-	2	15	3	23	8	62	13	0.5	0.7
Ability to work intuitively and use appropriate levels of intuition and rigour	-	-	1	8	5	42	6	50	12	0.6	0.6
Ability to understand logical argument and the direction of an implication	1	8	1	8	6	50	4	34	12	0.9	0.9
Ability to use examples and counter-examples	1	7	4	31	4	31	4	31	13	1.2	0.9
Ability to think logically in order to solve problems systematically and make rational decisions	5	38	5	38	3	24	-	-	13	2.2	0.8
Ability to solve multi-stage problems	2	14	4	29	7	50	1	7	14	1.5	0.8
Ability to formulate and work from useable definitions	1	9	4	33	3	25	4	33	12	1.2	1.0
Appreciation and/or understanding of the underlying logical structure of mathematics	3	25	1	8	3	25	5	42	12	1.2	1.2
In-depth understanding of some area or topic in mathematics	3	25	2	17	3	25	4	33	12	1.3	1.2

TABLE 16.22 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INDICATE THE DEGREE OF EMPHASIS GIVEN

TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Appreciation of the nature and importance of proof in mathematics	-	-	1	8	5	42	6	50	12	0.6	0.6
Appreciation of the contribution of mathematics to civilization	-	-	2	18	4	36	5	46	11	0.7	0.8
Appreciation of the power of mathematics to solve complex problems	2	17	2	17	5	41	3	25	12	1.3	1.0
Understanding and appreciation of the unity of mathematics through the inter-relationships of its various branches	-	-	-	-	-	-	14	100	14	0.0	0.0
Appreciation of mathematical elegance, e.g. in a proof	-	-	1	8	2	17	9	75	12	.3	.7
Judgment and discrimination about appropriate procedures and their relevance to solving specific problems	-	-	-	-	-	-	-	-	-	-	-
Positive attitudes for mathematics	-	-	1	50	-	-	1	50	2	1.0	1.0
Appreciation of mathematics as a human activity aimed at extending man's knowledge, and his understanding and use of his environment	-	-	14	100	-	-	-	-	14	2.0	0.0

TABLE 16.23

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDICATE THE DEGREE OF EMPHASIS GIVEN
 TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Ability to use and understand fundamental terminology	20	47	20	47	3	6	-	-	43	2.4	0.6
Conceptual and practical tools for mathematical application	30	70	13	30	-	-	-	-	43	2.7	0.5
Skills needed for further courses or work in mathematics	33	77	8	18	2	5	-	-	43	2.7	0.5
Ability to apply knowledge and skills to other subject areas or situations	29	67	11	26	3	7	-	-	43	2.6	0.6
Skills related to subsequent occupations	14	33	14	33	11	27	3	7	42	1.9	0.9
Sound and systematic study habits	13	30	21	49	7	16	2	5	43	2.0	0.8
Ability to work independently	14	33	22	51	5	11	2	5	43	2.1	0.8
Ability to assess own skills and abilities	10	24	13	32	12	29	6	15	41	1.7	1.0
Ability to estimate an answer	19	44	18	42	5	12	1	2	43	2.3	0.8
Ability to check the reasonableness of an answer	19	44	21	49	3	7	-	-	43	2.4	0.6
Ability to construct, use and interpret concrete models and mathematical diagrams	13	30	21	49	8	19	1	2	43	2.1	0.8
Ability to understand a problem stated in English and translate it into mathematical language to solve it	26	60	12	28	5	12	-	-	43	2.5	0.7
Ability to use symbolic notation	18	42	17	39	8	19	-	-	43	2.2	0.7
Ability to read a mathematical text book	12	29	17	40	10	24	3	7	42	1.9	0.9

TABLE 16.23 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Familiarity with basic literature and use of resources (library, texts, other students and colleagues)	1	2	10	24	17	42	13	32	41	1.0	0.8
Ability to write a proof	1	3	2	5	15	37	22	55	40	0.6	0.7
Ability to make and test generalizations	1	3	5	13	18	47	14	37	38	0.8	0.8
Ability to work intuitively and use approp- riate levels of intuition and rigour	3	7	13	31	19	45	7	17	42	1.3	0.8
Ability to understand logical argument and the direction of an implication	8	19	11	26	15	36	8	19	42	1.5	1.0
Ability to use examples and counter- examples	5	12	10	24	13	32	13	32	41	1.2	1.0
Ability to think logically in order to solve problems systematically and make rational decisions	22	51	14	33	7	16	-	-	43	2.3	0.7
Ability to solve multi-stage problems	8	20	24	58	7	17	2	5	41	1.9	0.7
Ability to formulate and work from useable definitions	8	19	15	37	14	34	4	10	41	1.7	0.9
Appreciation and/or understanding of the underlying logical structure of mathematics	6	14	13	31	14	33	9	22	42	1.4	1.0
In-depth understanding of some area or topic in mathematics	6	14	16	38	8	19	12	29	42	1.4	1.0
Appreciation of the nature and importance of proof in mathematics	3	7	5	12	14	33	20	48	42	0.8	0.9
Appreciation of the contribution of mathematics to civilization	1	3	5	13	15	38	18	46	39	0.7	0.8

TABLE 16.23 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%			
Appreciation of the power of mathematics to solve complex problems	7	17	16	39	12	29	6	15	41	1.6	0.9
Understanding and appreciation of the unity of mathematics through the inter- relationships of its various branches	-	-	-	-	-	-	43	100	43	0.0	0.0
Appreciation of mathematical elegance, e.g. in a proof	1	3	5	13	8	21	24	63	38	.6	.8
Judgment and discrimination about appropriate procedures and their relevance to solving specific problems	-	-	-	-	-	-	-	-	-	-	-
Positive attitudes for mathematics	3	33	1	11	3	33	2	23	9	1.6	1.2
Appreciation of mathematics as a human activity aimed at extending man's know- ledge, and his understanding and use of his environment	-	-	43	100	-	-	-	-	43	2.0	0.0

TABLE 16.24
COLLEGE OF APPLIED ARTS AND TECHNOLOGY MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	BUSINESS MEAN	TECHNICAL MEAN
Basic arithmetic	43.1	13.2
Business arithmetic	25.9	0.9
Basic algebra	20.7	34.5
Quadratic functions and equations	1.8	5.6
Exponential and logarithmic functions	5.6	13.4
Sequences and series	0.7	0.6
Analytic geometry and vectors	0.1	4.3
Synthetic geometry	-	1.7
Trigonometry, complex numbers and statics	-	21.5
Calculus	1.5	2.6
Statistics and probability	0.2	1.8

TABLE 16.25
COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS b %
		ENTRY MEAN ^a	S.D.	EXIT MEAN	S.D.	ENTRY MEAN	S.D.	EXIT MEAN	S.D.	
BASIC ARITHMETIC										
Fundamental arithmetic operations with fractions, decimals and integers.	50	1.9	.9	3.3	.9	3.1	.9	3.8	.7	50
Commutative, associative and distributive properties applied to these operations.	29	1.4	.9	3.3	1.3	3.0	1.6	4.0	.8	29
Percentage.	79	1.8	.7	3.3	.7	3.2	.6	4.0	.9	71
Simple and compound interest.	64	.9	.8	3.2	.7	1.8	.8	3.9	.6	43
Measurement: use of exact and approximate numbers (error, precision, accuracy, rounding off).	36	1.2	1.1	3.0	.7	2.6	.6	3.6	.9	21
Scientific notation: conversion to and from.	36	1.2	.8	3.4	1.1	2.3	1.0	4.2	1.1	36
Scientific notation: use in computation and estimation.	29	.8	1.0	3.3	1.3	2.2	1.3	4.3	1.0	29
Metric system: traditional units and uses.	14	.0	.0	2.5	.7	2.7	.6	4.0	1.4	14
Metric system - S.I.U.	7	.0	.0	2.0	.0	3.0	.0	5.0	.0	7
Pictorial representation of data (bar, line, directed number graphs, histograms, pie charts).	29	1.2	1.1	3.2	.5	2.0	1.0	4.2	.8	21
Fundamental operations with integers.	21	2.0	1.6	3.4	1.1	3.4	.9	4.0	1.0	21
Real numbers (rationals, irrationals, recurring and non-recurring decimals, etc.)	21	.7	1.2	3.0	1.0	3.3	1.0	4.3	1.2	21

^aThe means in this table are based on a response key which ranges from 0-No knowledge to 5-Complete mastery: understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 16.25 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY MEAN	S.D.	EXIT MEAN	S.D.	ENTRY MEAN	S.D.	EXIT MEAN	S.D.	
BUSINESS ARITHMETIC										
Home ownership.	14	.5	.7	2.5	2.1	1.5	.7	3.5	.7	7
Municipal Taxation.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Foreign exchange	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Equations of equivalence.	36	.6	.9	2.8	1.1	1.4	.9	4.0	.7	21
Ordinary annuities	29	.3	.5	3.3	.5	.5	.6	3.5	.6	7
Annuities due and deferred.	14	.0	.0	3.5	.7	.0	.0	4.0	.0	0
Stocks.	7	.0	.0	3.0	.0	.0	.0	3.0	.0	0
Sinking funds.	21	.0	.0	3.3	.6	.3	.6	3.7	.6	7
Customs duties and excise taxes.	0	.0	.0	.0	.0	.0	.0	1.0	.0	0
Bonds and debentures.	7	2.0	2.8	2.0	1.4	2.0	2.8	3.0	.0	0
Income tax.	7	.0	.0	2.0	.0	2.0	.0	4.0	.0	7
Break-even analysis.	14	.0	.0	3.5	.7	.0	.0	3.5	.7	0

BASIC ALGEBRA

Generalized arithmetic: literal notation, idea of variable.	57	2.0	.9	3.2	.8	3.2	1.0	3.8	.8	57
Manipulating, simplifying and evaluating algebraic expressions	43	1.5	.6	3.0	.6	3.3	.5	4.0	.9	43
Linear equations and word problems involving one unknown.	64	1.8	.4	3.3	.9	3.3	.7	3.9	.9	57
Systems of linear equations in 2 unknowns and applications.	36	1.6	.6	3.2	.8	3.2	.8	4.0	.7	36
Systems of linear equations in 3 unknowns.	7	2.0	.0	3.0	.0	1.5	2.1	4.0	.0	7

TABLE 16.25 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF CONFERENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Solution of linear equations using determinants.	7	.0	.0	3.0	.0	.5	.7	3.0	.0	0
Solution of linear equations using matrices.	0	.0	.0	.0	.0	1.0	.0	.0	.0	0
Linear inequalities and graphical solution of linear programming problems.	7	2.0	.0	4.0	.0	1.5	.7	4.0	.0	0
Factoring: various types, complex fractions.	29	1.5	.6	3.3	1.0	3.0	.7	4.5	.6	29
Operations with rational algebraic fractions.	14	.0	.0	3.5	.7	2.7	.6	4.5	.7	14
Solution of simple rational equations.	7	2.5	.7	3.5	.7	3.0	.0	4.0	1.4	7
Operations with radicals and irrational.	14	.5	.7	3.5	.7	2.0	1.7	4.0	1.4	14
Solution of radical and irrational equations.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Four fundamental operations on polynomials.	29	1.0	.8	3.3	.5	2.0	1.2	4.0	.8	29
Manipulation, rearrangement, evaluation of algebraic formulae.	36	.4	.9	3.0	1.4	2.8	1.2	4.0	1.0	36
Dimensional analysis: use with formulae and prefixes (e.g., kilo, micro).	7	.0	.0	2.0	.0	2.0	1.4	4.0	.0	7
Concept of relation: classes, graphing, inverse.	7	.0	.0	3.0	.0	2.5	.7	5.0	.0	7
Concept of function: notation and evaluation of functional values.	21	1.0	1.0	3.7	.6	3.0	.8	4.3	.6	21
Composition and combinations of functions.	0	.0	.0	.0	.0	3.0	.0	.0	.0	0
Ratio and proportion.	36	1.4	.6	3.0	.7	3.0	.6	4.0	.7	36

TABLE 16.25 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Variation (direct, inverse, joint), applications.	14	.0	.0	3.5	.7	2.7	1.5	4.0	1.4	14
Binomial Theorem: r^{th} term, applications.	0	.0	.0	.0	.0	1.0	.0	.0	.0	0
QUADRATIC FUNCTIONS AND EQUATIONS										
Quadratic function and its properties: parabola, graph, symmetry, intercepts.	7	1.0	1.4	3.0	.0	2.0	1.4	3.0	.0	7
Inverse of the quadratic function.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Maxima and minima problems: graphical, algebraic solutions.	7	2.0	.0	3.0	.0	1.5	2.1	4.0	.0	7
Applications: absolute value, reciprocal, regions, point mappings.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Higher degree polynomials: graphs, use of factor theorem and factoring.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Translations of the plane.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Quadratic equations: completing the square, formula, problems.	21	1.7	.6	3.7	1.2	2.3	1.0	4.0	1.0	21
Linear-quadratic systems.	0	.0	.0	.0	.0	2.0	.0	.0	.0	0
Quadratic inequalities.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Applications: non-real roots, related equations such as $4-3x - x = 12$.	7	.0	.0	3.0	.0	1.5	2.1	5.0	.0	7
Theory of quadratic equations: nature of roots, discriminant.	7	1.0	.0	4.0	.0	2.0	1.4	5.0	.0	7
Theory of quadratic equations: sum and product of roots, applications.	0	.0	.0	.0	.0	1.0	.0	.0	.0	0

TABLE 16.25 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	EXIT	
EXPONENTIAL AND LOGARITHMIC FUNCTIONS										
Exponents: whole numbers, integers, rationals.	36	1.4	.9	3.2	.5	2.8	.8	3.8	.8	36
Graphs of common exponential functions.	7	2.0	.0	3.0	.0	2.0	1.4	4.0	.0	7
Definition of e^x , a^x , and Laws of exponents.	21	1.3	1.2	3.3	.6	3.0	.0	4.3	.6	21
Exponential equations.	14	1.0	1.4	3.0	.0	3.0	.0	4.5	.7	14
Use of exponential tables.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Logarithm: definition, relation to exponential.	29	.8	1.0	3.0	.0	2.0	1.4	3.8	.5	21
Laws of logarithms.	21	.3	.6	3.0	.0	1.7	1.5	3.7	.6	14
Computations with logarithms.	29	.8	1.0	3.3	.5	2.0	1.4	3.8	.5	21
Natural logarithms.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Logarithmic equations.	7	2.0	.0	3.0	.0	3.0	.0	4.0	.0	7
Discussion and graphing of exponential and logarithmic functions, semi-logs.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Applications in business and/or technology (growth and decay)	14	.5	.7	3.5	.7	1.5	2.1	4.5	.7	7
Operation and use of slide rule.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Operation and use of calculators.	7	2.0	.0	5.0	.0	3.0	.0	5.0	.0	7
SEQUENCES AND SERIES*										
Sequences: definitions, general term, graphs, limits	7	1.0	.0	3.0	.0	1.0	.0	3.0	.0	0

TABLE 16.25 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY BUSINESS MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	
<u>The Straight Line</u>								
Derivation of various forms of the equation: two points, slope and point, intercepts, etc.	7	2.0	.0	3.0	.0	3.0	.0	7
Identifying, constructing and graphing a straight line from given data	7	2.0	.0	3.0	.0	3.0	.0	7
<u>CALCULUS</u>								
Limits	7	.0	.0	3.0	.0	.0	4.0	.0
Δ - Process and slope	7	.0	.0	3.0	.0	.0	4.0	.0
Derivatives of polynomials	7	.0	.0	3.0	.0	.0	4.0	.0
Derivatives of algebraic expressions, requiring application of product, quotient or power rules	7	.0	.0	3.0	.0	.0	4.0	.0
Applications of differentiation: maxima and minima problems, curve sketching	7	.0	.0	3.0	.0	.0	4.0	.0
Applications of differentiation: geometry, related rates	7	.0	.0	3.0	.0	.0	4.0	.0
<u>STATISTICS AND PROBABILITY</u>								
Statistics: uses, data gathering, representation and interpretation	7	.0	.0	3.0	.0	.0	3.0	.0

* From 'Sequences and Series' only those few topics taught in C.A.A.T. Business Math have been included in this table.

TABLE 16.26

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY MEAN ^a	S.D.	EXIT MEAN	S.D.	ENTRY MEAN	S.D.	EXIT MEAN	S.D.	
BASIC ARITHMETIC										
Fundamental arithmetic operations with fractions, decimals and integers.	51	2.3	.7	3.2	.6	3.5	.8	4.3	.6	56
Commutative, associative and distributive properties applied to these operations.	42	2.4	.8	3.3	.7	3.4	.8	4.2	.7	47
Percentage.	44	2.0	1.0	3.1	.9	3.5	.9	4.2	.5	51
Simple and compound interest.	12	1.4	.9	2.5	.9	2.6	1.0	3.6	.5	12
Measurement: use of exact and approximate numbers (error, precision, accuracy, rounding off).	60	1.1	1.0	3.0	.6	3.0	1.1	3.9	.8	58
Scientific notation: conversion to and from.	65	1.5	.9	3.3	.7	2.9	.8	3.9	1.0	63
Scientific notation: use in computation and estimation.	65	1.4	1.0	3.2	.9	2.8	.7	4.0	1.0	60
Metric system: traditional units and uses.	16	1.5	1.1	3.0	.8	3.1	.6	3.3	1.5	14
Metric system - S.I.U.	23	1.3	1.0	2.8	1.1	3.0	.8	3.5	1.3	28
Pictorial representation of data (bar, line, directed number graphs, histograms, pie charts).	28	1.5	.9	3.0	1.0	2.9	.7	3.7	.8	28
Fundamental operations with integers.	33	2.6	.9	3.5	.9	3.5	.9	4.2	.8	40
Real numbers (rationals, irrationals, recurring and non-recurring decimals, etc.)	44	1.9	.8	3.1	.7	3.0	.9	3.8	.9	40

^aThe means in this table are based on a response key which ranges from 0-No knowledge to 5 Complete mastery; understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.

The figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 15.26 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	EXIT	
BUSINESS ARITHMETIC										
Home ownership.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Municipal Taxation.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Foreign exchange	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Equations of equivalence.	2	.0	.0	2.0	.0	.0	.0	4.0	.0	0
Ordinary annuities	5	1.0	1.4	2.5	.7	1.0	1.4	3.5	.7	0
Annuities due and deferred.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Stocks.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Sinking funds.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Customs duties and excise taxes.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Bonds and debentures.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Income tax.	0	.0	.0	.0	.0	.0	.0	.0	.0	0
Break-even analysis.	5	.0	.0	2.0	.0	.0	.0	3.5	.7	5

BASIC ALGEBRA

Generalized arithmetic: literal notation, idea of variable.	60	2.2	.8	3.3	.6	3.2	.8	4.1	.7	51
Manipulating, simplifying and evaluating algebraic expressions	81	1.9	.6	3.1	.6	3.2	.7	4.2	.6	86
Linear equations and word problems involving one unknown.	74	1.8	.8	3.1	.6	3.2	.7	4.2	.5	79
Systems of linear equations in 2 unknowns and applications.	74	1.7	.9	3.1	.6	3.1	.8	4.1	.5	74
Systems of linear equations in 3 unknowns.	60	1.1	.9	2.9	.7	2.6	1.1	3.8	.6	58

TABLE 16.26 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	MEAN	S.D.	ENTRY	MEAN	S.D.	EXIT	
Solution of linear equations using determinants.	60	.2	.7	2.9	.8	1.4	1.2	3.7	.7	37
Solution of linear equations using matrices.	12	.4	1.0	2.0	1.3	1.0	1.1	3.3	1.3	12
Linear inequalities and graphical solution of linear programming problems.	19	.0	.0	1.8	1.1	1.2	1.2	3.1	1.2	16
Factoring: various types, complex fractions.	70	1.6	.6	3.0	.6	2.9	.9	4.0	.7	58
Operations with rational algebraic fractions.	67	1.6	.6	3.0	.5	3.1	.9	4.2	.6	67
Solution of simple rational equations.	58	1.7	.7	3.2	.5	3.1	.9	4.1	.6	49
Operations with radicals and irrationals.	65	1.3	.7	2.8	.5	2.8	.8	3.7	.7	63
Solution of radical and irrational equations.	51	1.0	.7	2.6	.7	2.3	.9	3.6	.8	49
Four fundamental operations on polynomials.	47	1.7	.6	3.1	.6	2.9	.5	4.1	.6	42
Manipulation, rearrangement, evaluation of algebraic formulae.	79	1.7	.7	3.1	.5	3.1	.9	4.2	.6	77
Dimensional analysis: use with formulae and prefixes (e.g., kilo, micro).	40	.9	.8	2.7	1.0	2.4	.8	3.6	.9	40
Concept of relation: classes, graphing, inverse.	23	.8	.6	2.1	1.2	2.2	.8	3.1	1.0	28
Concept of function: notation and evaluation of functional values.	53	1.2	.8	2.6	1.0	2.5	.7	3.7	.7	60
Composition and combinations of functions.	23	.8	.8	2.1	1.2	1.8	.8	3.1	1.1	26
Ratio and proportion.	49	1.5	.7	3.0	.6	3.0	.8	3.9	.6	53

TABLE 16.26 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Variation (direct, inverse, joint), applications.	44	1.0	.8	2.8	.8	2.7	1.2	3.7	.7	47
Binomial Theorem: r^{th} term, applications.	23	.5	.8	2.2	1.2	1.6	1.1	3.1	.9	23
QUADRATIC FUNCTIONS AND EQUATIONS										
Quadratic function and its properties: parabola, graph, symmetry, intercepts.	53	1.4	.7	2.9	.8	2.6	1.0	3.8	1.0	47
Inverse of the quadratic function.	9	.6	.6	2.4	1.3	2.4	.9	3.2	1.3	12
Maxima and minima problems: graphical, algebraic solutions.	23	1.2	.9	2.5	1.2	2.2	1.0	3.3	1.5	14
Applications: absolute value, reciprocal, regions, point mappings.	12	.5	.6	2.3	1.2	1.8	1.0	3.0	1.6	12
Higher degree polynomials: graphs, use of factor theorem and factoring.	16	.5	.9	1.9	1.4	1.8	1.0	2.9	1.2	14
Translations of the plane.	2	.0	.0	1.0	1.7	.6	.9	2.0	1.4	5
Quadratic equations: completing the square, formula, problems.	56	1.5	.8	3.1	.5	2.8	.8	3.9	.7	47
Linear-quadratic systems.	23	.8	.6	2.2	.9	1.5	1.1	3.0	1.2	14
Quadratic inequalities.	7	.2	.5	1.4	1.3	1.2	.8	2.4	1.5	9
Applications: non-real roots, related equations such as $\sqrt{4-3x} - x = 12$.	30	.7	.8	2.6	.7	1.5	1.2	3.3	.8	26
Theory of quadratic equations: nature of roots, discriminant.	33	.9	.7	2.6	.9	2.3	1.3	3.4	1.2	23
Theory of quadratic equations: sum and product of roots, applications.	14	.6	.5	2.1	1.1	1.7	1.1	2.9	1.4	12

TABLE 16.26 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	EXIT	
EXPONENTIAL AND LOGARITHMIC FUNCTIONS										
Exponents: whole numbers, integers, rationals.	58	1.8	.6	3.1	.6	2.9	.8	4.0	.6	49
Graphs of common exponential functions.	33	.9	.9	2.9	.4	2.4	1.3	3.8	.8	26
Definition of e^x , a^x , and Laws of exponents.	49	1.1	1.0	3.1	.7	2.5	.8	4.0	.8	44
Exponential equations.	35	.7	.9	2.6	.7	2.0	.8	3.8	.7	33
Use of exponential tables.	16	.8	1.0	2.6	1.2	1.8	1.3	3.2	1.6	14
Logarithm: definition, relation to exponential.	49	1.1	.8	3.0	.6	2.6	1.0	4.0	1.1	49
Laws of logarithms.	56	1.2	.9	2.9	.8	2.5	1.0	3.8	1.1	53
Computations with logarithms.	47	1.3	.9	3.0	.6	2.5	1.0	3.8	1.2	42
Natural logarithms.	35	.3	.8	2.4	.9	1.9	1.2	3.5	1.2	30
Logarithmic equations.	35	.4	.9	2.3	1.1	1.8	1.1	3.5	.8	30
Discussion and graphing of exponential and logarithmic functions, semi-logs.	26	.2	.4	2.2	1.1	1.7	1.0	3.5	1.2	21
Applications in business and/or technology (growth and decay)	23	.1	.3	2.6	.9	1.7	.9	3.8	.8	16
Operation and use of slide rule.	23	1.1	.8	2.8	.9	1.3	1.2	3.1	1.2	9
Operation and use of calculators.	37	1.4	1.0	3.3	.5	2.3	1.3	3.9	.7	19

TABLE 16.26 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		ENTRY	EXIT	MEAN	ENTRY	EXIT	MEAN			
SEQUENCES AND SERIES										
Sequences: definitions, general term, graphs, limits.	9	1.0	.8	2.3	1.0	2.0	1.0	3.0	1.2	12
Applications: A.P., G.P., Fibonacci	12	.9	.9	2.4	.8	2.1	.9	3.1	.9	14
Series: definitions, notation, first n terms.	7	1.0	1.0	2.4	.9	2.2	1.1	3.2	.8	9
Formulae: A.P., G.P., convergent geometric.	7	1.2	.8	2.2	.8	1.8	.8	3.0	1.0	7
Mathematical induction.	0	1.0	.0	1.0	.0	1.0	.0	2.0	.0	0
ANALYTIC GEOMETRY AND VECTORS										
Idea of locus, applications.	12	.6	.8	2.1	1.6	1.9	1.1	3.0	1.5	14
The Straight Line										
Derivation of various forms of the equation: two points, slope and point, intercepts, etc.	47	1.4	.7	3.0	.7	2.6	.9	3.9	.8	47
Identifying, constructing and graphing a straight line from given data.	49	1.3	.7	2.9	.7	2.5	.9	3.9	.7	44
Use of experimental data to obtain best straight line, interpolation.										
Cartesian 3-space and applications.	21	.8	.9	2.3	1.2	1.5	.9	3.5	1.0	16
	0	.5	.7	.5	.7	.5	.7	1.5	2.1	0
Circle and Sphere										
Equation of circle and basic properties (symmetry, chords, intersection).	16	1.1	1.0	2.9	.8	2.8	1.3	3.8	1.1	14
Tangents to a circle, a sphere, applications.	14	1.0	1.0	2.6	1.3	2.3	.7	3.7	1.2	14

TABLE 16.26 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Parabola, Ellipse and Hyperbola										
Conic sections in the environment.	12	.7	.8	2.2	1.2	1.5	.8	3.0	1.3	12
Construction techniques, curve stitching; basic vocabulary.	5	.8	1.0	1.8	1.5	1.3	1.3	3.0	2.0	5
Definitions, equations in standard positions and forms, properties, problems.	9	.8	.8	2.6	1.5	1.9	.9	3.4	1.5	9
Linear-quadratic systems of equations.	7	.6	.6	2.0	1.4	1.7	.5	3.4	1.1	9
Problems and applications.	5	.7	.6	2.0	1.7	1.4	.9	3.4	2.1	2
Use of transformations.	0	.5	.7	.5	.7	.3	.5	3.0	2.0	0
Vectors in 3-Space										
Coordinates, ordered triples, models, equal vectors.	0	.5	.7	.5	.7	.5	.7	2.0	2.8	0
Addition, scalar multiplication, problems.	2	.3	.6	.7	.6	1.0	1.0	2.3	2.1	2
SYNTHETIC GEOMETRY										
Idea of locus, applications.	5	.7	.6	2.0	1.7	1.3	1.2	2.7	2.3	5
Circle: definition, basic terminology and formulae.	9	.6	.9	2.4	1.3	3.0	1.3	3.8	1.2	12
Circle: chord, angle, secant, tangent properties.	5	.7	.6	1.7	1.5	3.1	1.5	3.6	1.4	7
Sphere: definition, formulae, properties.	2	.7	.6	1.0	1.0	3.0	1.8	3.5	1.5	5
Applications of vectors, transformations to loci, circle and sphere.	0	.5	.7	.5	.7	.5	.7	2.0	2.8	0
Famous problems of geometry: nine-point circle, etc.	0	.5	.7	.5	.7	.5	.7	1.0	1.4	0

TABLE 16.26 (Cont'd)
COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Similar figures in 2- and 3-space.	0	1.0	.8	1.0	.8	1.3	1.0	1.5	1.0	2
Applications of similar figures: mean proportional theorem, etc.	0	.5	.7	.5	.7	.5	.7	1.0	1.4	0
Solid geometry: mensuration.	12	1.1	.7	2.4	1.5	2.8	1.6	3.2	1.6	12
Geometries: Euclidean and other.	5	1.8	1.5	2.3	2.1	2.0	1.2	2.9	1.5	0
TRIGONOMETRY, COMPLEX NUMBERS AND STATICS										
Trigonometry										
Primary and reciprocal trigonometric functions (definitions, graphs, properties).	72	1.8	.7	3.4	.6	2.9	.9	4.0	.7	56
Basic identities and expansions.	42	1.1	1.0	2.7	.9	2.4	1.3	3.5	1.3	40
Radian measure.	72	.7	.9	2.8	.5	2.3	1.3	3.7	.8	60
Amplitude, periodicity, phase shift, and graphing.	51	.6	.7	2.8	.7	1.7	.9	3.7	.9	40
Solution of equations.	47	.5	.7	2.5	.9	1.6	1.0	3.3	.9	37
Inverses of trigonometric functions.	47	.8	1.0	2.8	.7	2.1	1.3	3.7	1.0	37
Applications of linear transformations.	7	.6	.8	1.3	1.4	1.1	1.1	2.1	1.7	9
Laws of sines and cosines.	58	1.3	1.0	3.2	.7	2.2	.9	3.9	.6	47
Solution of right triangle.	67	1.9	.9	3.4	.6	2.9	1.0	4.0	.6	56
Solution of oblique triangle.	60	1.2	.8	3.3	.7	2.3	.8	3.9	.6	51
Polar coordinates.	28	.4	.7	2.4	.9	1.4	1.0	3.4	1.2	30

TABLE 16.26 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
<u>Complex numbers</u>										
In rectangular form $(x + iy)$.	37	.2	.6	2.7	.8	1.3	1.0	3.6	1.2	26
In polar form $[(r, \theta) \text{ or } r(\cos \theta + i \sin \theta)]$.	35	.2	.5	2.6	.8	1.2	1.0	3.6	1.2	23
In exponential form (r, i) .	23	.3	.7	2.5	1.0	1.5	1.0	3.5	1.5	19
Applications: A.C. circuits, etc.	26	.1	.3	2.7	.9	1.4	1.0	3.7	1.3	19
<u>Statics</u>										
Moments of forces.	9	1.0	.9	1.8	1.2	1.1	1.0	2.8	1.3	7
Centres of gravity.	5	.8	1.0	1.5	1.3	1.0	1.1	2.5	1.4	5
Friction.	0	.5	.7	.5	.7	.8	.5	3.0	2.5	0
<u>CALCULUS</u>										
Limits.	16	.1	.4	2.6	.8	.7	.8	2.7	1.0	7
Δ - Process and slope.	16	.1	.4	2.9	.9	.9	1.1	3.3	1.3	7
Derivatives of polynomials.	14	.4	.8	2.9	1.4	.6	1.1	3.3	1.6	2
Derivatives of algebraic expressions, requiring application of product, quotient or power rules.	9	.2	.5	2.6	1.5	.2	.5	2.6	1.5	0
Applications of differentiation: maxima and minima problems, curve sketching.	9	.3	.5	2.8	.5	.3	.5	3.0	.8	0
Applications of differentiation: geometry, related rates.	9	.3	.5	2.8	.5	.3	.5	3.0	.8	0
Derivatives of transcendental (trig, exp, log) functions.	7	.3	.6	3.0	.0	.3	.6	3.3	.6	0
Applications involving transcendental functions.	5	.5	.7	3.0	.0	.5	.7	3.5	.7	0
Differentials and inverse differentiation.	7	.3	.6	3.0	.0	.3	.6	3.3	.6	0
Approximate integration (Trapezoidal rule).	5	.3	.6	2.3	1.2	.3	.6	2.7	.6	0

TABLE 16.26 (Cont'd)

COLLEGE OF APPLIED ARTS AND TECHNOLOGY TECHNICAL MATHEMATICS YEAR 1

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

TOPIC	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL						PREFERRED LEVEL						DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY			EXIT			ENTRY			EXIT			
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Indefinite integral, Fundamental Theorem of calculus.	5	.3	.6	2.3	1.2	.3	.6	2.7	.6					0
Definite integral, area under a curve.	5	.3	.6	2.3	1.2	.3	.6	2.7	.6					0
Indefinite integrals and their evaluation.	2	.5	.7	2.0	1.4	.5	.7	2.5	.7					0
Other applications (specify).	0	.0	.0	.0	.0	.0	.0	.0	.0					0
Integration formulae: power, log, exp, trig, etc.	5	.3	.6	2.3	1.2	.3	.6	2.7	.6					0
<u>STATISTICS AND PROBABILITY</u>														
Statistics: uses, data gathering, representation and interpretation.	9	.2	.5	2.4	.9	2.2	.8	2.8	1.1					12
Descriptive statistics: mean, median, mode, standard deviation.	9	.2	.5	2.4	.9	2.2	.8	2.8	1.1					12
Applications: in daily lives, industrial quality control (testing, sampling).	5	.0	.0	2.5	.7	2.5	.7	3.5	.7					5
Use of counting techniques: permutations, combinations, tree diagrams.	7	.3	.5	2.3	1.5	1.8	1.3	2.8	1.9					7
Empirical and a priori probability with real life and experimental (e.g., coin-tossing) examples.	5	.0	.0	3.0	.0	2.5	.7	4.0	.0					5
Law of large numbers, implications.	0	.0	.0	.0	.0	.0	.0	.0	.0					0
Basic rules of probability: simple, compound, independent events.	5	.3	.6	2.0	1.0	1.7	.6	2.7	1.5					5
Concept of probability distribution.	5	.0	.0	1.5	.7	1.5	.7	2.0	1.4					5
Applications: Mendelian genetics, solution of problems using mathematical expectation, etc.	2	.0	.0	.5	.7	.5	.7	1.0	1.4					2
Bayes Theorem.	0	.0	.0	.0	.0	.0	.0	.0	.0					0

TABLE 17.1
UNIVERSITY MATHEMATICS YEAR 1
TEACHERS' PROFESSIONAL EXPERIENCE

	NUMBER OF YEARS													TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+ TOTAL
University teaching	0	1	0	1	0	0	4	1	2	5	2	12	8	1 37
Teaching this course (or its equivalent)	0	4	8	5	4	4	0	1	3	0	4	2	2	0 37

TABLE 17.2
UNIVERSITY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"HAVE YOU EVER TAUGHT AT ANOTHER INSTITUTIONAL LEVEL?"

	YEAR 1	
	N	%
No	22	60
Elementary	0	0
Secondary	7	19
Community college	1	3
Other	3	8
More than one other	4	10
Total	37	100

TABLE 17.3
UNIVERSITY MATHEMATICS
TEACHERS' HIGHEST ACADEMIC DEGREE

	YEAR 1	
	N	%
Doctorate	32	89
Master's	5	11
Honour Bachelor's (4 year)	0	0
Bachelor's	0	0
Post-Secondary Diploma	0	0
Other	0	0
Total	37	100

TABLE 17.4
UNIVERSITY MATHEMATICS
UNIVERSITY CATEGORY

	YEAR 1	
	N	%
Professor	9	24
Associate Professor	18	49
Assistant Professor	8	22
Lecturer/Instructor	2	5
Other	0	0
Total	37	100

TABLE 17.5
UNIVERSITY MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE TO WHAT EXTENT THE CONSIDERATIONS LISTED BELOW
INFLUENCED YOUR TEACHING OF THIS COURSE"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Interests of students	7	19	16	43	7	19	6	16	1	3	37
Knowledge of subject of incoming students	14	38	11	30	7	19	4	11	1	3	37
Relationship between this course and others taken concurrently	6	16	9	24	10	27	11	30	1	3	37
Information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course	11	30	12	33	6	16	6	16	2	5	37
Ontario Ministry of Education guidelines	1	3	2	5	2	5	15	42	16	44	36
Course outline assigned to you	21	57	7	19	-	-	4	11	5	13	37
Special interests or training you might have	8	22	9	24	9	24	10	27	1	3	37
Content and approach of principal text(s)	15	41	10	27	5	13	6	16	1	3	37
Staffing	8	24	-	-	1	3	8	24	16	49	33
Other	4	19	-	-	-	-	2	10	15	71	21

TABLE 17.6

UNIVERSITY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ARE THERE FORMAL OR STRONGLY RECOMMENDED
PREQUISITES FOR THIS COURSE?"

	YEAR 1	
	N	%
Yes	31	84
No	<u>6</u>	<u>16</u>
Total	37	100

TABLE 17.7

UNIVERSITY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT IS THE QUALITY OF PREPARATION OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
Excellent	1	3
Good	10	29
Fair	17	50
Poor	<u>6</u>	<u>18</u>
Total	34	100

TABLE 17.8

UNIVERSITY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DO YOU FIND VARIATION IN
COMPETENCIES OF INCOMING STUDENTS?"

	YEAR 1	
	N	%
A great deal	32	86
A moderate amount	4	11
Very little	1	3
Do not know	<u>-</u>	<u>-</u>
Total	37	100

TABLE 17.9

UNIVERSITY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"TO WHAT EXTENT DOES THIS COURSE ALLOW
STUDENTS TO PROGRESS AT INDIVIDUAL RATES?"

	YEAR 1	
	N	%
Great extent	-	-
Moderate extent	3	8
Small extent	4	11
Not at all	<u>29</u>	<u>81</u>
Total	36	100

TABLE 17.10

UNIVERSITY MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"WHAT PERCENTAGE OF IN-CLASS TIME IS DEVOTED TO
EACH OF THE FOLLOWING INSTRUCTIONAL TECHNIQUES?"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Lecture (with or without provision for student questions)	-	-	1	3	-	-	2	5	2	2	5	8	19	51	5	14	37
Socratic (question and answer technique, interaction between students and instructor)	12	32	16	43	5	14	1	3	2	2	-	1	3	-	-	-	37
Practically-oriented work -- computers, laboratory work, experiments	31	84	2	5	1	3	3	8	-	-	-	-	-	-	-	-	37
Small group activities (with the instructor supervising a number of small groups at the same time)	29	78	4	11	3	8	1	3	-	-	-	-	-	-	-	-	37
Seminar, tutorial (with or without additional instructors; this technique may include student presentation)	13	35	3	8	10	27	7	19	4	11	-	-	-	-	-	-	37
Classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor, including library or resource centre activity)	33	89	1	3	-	-	3	8	-	-	-	-	-	-	-	-	37
Individualized instruction (each student proceeds at his own speed, e.g., programmed learning, learning modules)	37	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37
Testing	8	22	29	78	-	-	-	-	-	-	-	-	-	-	-	-	37
Audiovisual (television, tapes, films, radio, etc.)	33	89	4	11	-	-	-	-	-	-	-	-	-	-	-	-	37
Other	32	86	3	8	-	-	2	6	-	-	-	-	-	-	-	-	37

TABLE 17.11
 UNIVERSITY MATHEMATICS YEAR 1
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "TO WHAT EXTENT DO STUDENTS
 USE THE FOLLOWING RESOURCES"

	Great Extent		Moderate Extent		Small Extent		Not At All		Not Applicable		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Main text	27	77	5	14	-	-	1	3	2	6	35	
Main text plus supplementary text(s)	2	6	7	22	12	38	6	19	5	15	32	
Two or more main texts or materials from other texts	-	-	2	6	4	12	21	64	6	18	33	
Mimeographed materials (lecture notes, etc.)	9	25	7	19	6	17	12	33	2	6	36	
Reference books, dictionaries, encyclopedias, journals, etc.	-	-	1	3	7	21	22	65	4	11	34	
Individualized learning packages	-	-	-	-	2	8	29	84	3	8	34	
Laboratory and/or computer equipment	1	3	2	6	1	3	26	74	5	14	35	
Audiovisual media (television, tapes, film strips, etc.)	-	-	-	-	3	9	26	76	5	15	34	
Other	2	8	-	-	-	-	16	67	6	25	24	

TABLE 17.12

UNIVERSITY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE AVERAGE OUT-OF-CLASS TIME
STUDENTS SPEND ON COURSE ASSIGNMENTS"

	YEAR 1	
	N	%
0%	-	-
1-25%	-	-
26-50%	-	-
51-75%	-	-
76-100%	7	19
101-150%	14	39
151-200%	-	-
201%+	<u>15</u>	<u>42</u>
Total	36	100

*This estimate is given as a percentage of class time. For instance, if students are expected to work 2 hours out of class for 1 hour of class time, the response would be 200.

TABLE 17.13

UNIVERSITY MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"IS IT POSSIBLE FOR STUDENTS TO BE EXEMPT FROM
WRITING THE FINAL EXAMINATION?"

	YEAR 1	
	N	%
Yes	-	-
No	35	100
Not applicable	-	-
Total	35	100

TABLE 17.14

UNIVERSITY MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"ESTIMATE THE PERCENTAGE OF STUDENTS' FINAL MARK
NORMALLY ALLOCATED TO EACH CATEGORY OF ASSESSMENT"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%			
Final examination*	1	3	-	-	-	-	1	3	12	33	17	47	5	14	-	-	-	-	36
Mid-term examination(s)	4	11	-	-	12	33	13	36	6	17	-	-	1	3	-	-	-	-	36
Other written tests	9	25	3	8	9	25	7	20	5	14	2	5	1	3	-	-	-	-	36
Other oral tests	36	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Individual papers (essays, reports, etc.)	35	97	-	-	-	-	1	3	-	-	-	-	-	-	-	-	-	-	36
Individual projects (e.g., oral presentations)	36	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Group or team papers, projects	36	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Problems, exercises	19	53	9	25	4	11	1	3	3	8	-	-	-	-	-	-	-	-	36
Notebooks	36	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Laboratory and/or other class participation	35	97	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Effort	34	94	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Attendance	34	94	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Other	34	94	1	3	1	3	-	-	-	-	-	-	-	-	-	-	-	-	36

*When respondents indicated that students could be exempted from their final examinations, the final mark allocation was determined by excluding marks assigned for the final examination. When all students were required to write the final examination it was included in the final mark allocation.

TABLE 17.15

UNIVERSITY MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little		No		Not		TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N	%	N	%			
The student will develop and/or acquire:													
.ability to use and understand fundamental terminology;	26	72	8	22	2	6	-	-	-	-	36		
.conceptual and practical tools for mathematical application;	28	78	8	22	-	-	-	-	-	-	36		
.skills needed for further courses or work in mathematics;	22	61	7	19	4	11	-	-	3	8	36		
.ability to apply knowledge and skills to other subject areas or situations;	13	36	14	39	5	14	3	8	1	3	36		
.skills related to subsequent occupations;	4	11	8	22	12	33	9	25	3	8	36		
.sound and systematic study habits;	12	33	9	25	9	25	5	14	1	3	36		
.ability to work independently;	10	28	13	36	9	25	2	6	2	6	36		
.ability to assess own skills and abilities;	5	14	10	28	6	17	10	28	5	14	36		
.ability to estimate an answer;	9	25	11	31	8	22	6	17	2	6	36		
.ability to check the reasonableness of an answer;	13	36	14	39	6	17	2	6	1	3	36		
.ability to construct, use and interpret concrete models and mathematical diagrams;	15	42	9	25	8	22	2	6	2	6	36		
.ability to understand a problem stated in English and translate it into mathematical language to solve it;	18	50	11	33	5	14	-	-	1	3	36		

TABLE 17.15 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INDICATE THE DEGREE OF EMPHASIS GIVEN

TO EACH OF THE FOLLOWING AIMS"

	Great Deal		Moderate		Very Little	No	Not	TOTAL	MEAN	S.D.
	N	%	N	%	N	%	N			
.ability to use symbolic notation;	13	36	16	44	6	17	1	3	-	36
.ability to read a mathematical text book;	6	17	13	36	11	31	3	8	3	36
.familiarity with basic literature and use of resources (library, texts, other students and colleagues)	2	6	9	25	12	33	10	28	3	36
.ability to write a proof;	9	25	5	14	15	42	7	19	-	36
.ability to make and test generalizations;	1	3	10	28	12	33	10	28	3	36
.ability to work intuitively and use appropriate levels of intuition and rigour;	14	39	9	25	7	19	4	11	2	36
.ability to understand logical argument and the direction of an implication;	19	53	10	28	3	8	4	11	-	36
.ability to use examples and counter-examples;	14	39	12	33	6	17	3	8	1	36
.ability to think logically in order to solve problems systematically and make rational decisions;	19	53	15	42	1	3	1	3	-	36
.ability to solve multi-stage problems;	7	19	18	50	9	25	2	6	-	36
.ability to formulate and work from useable definitions;	31	86	12	33	5	14	6	17	2	36

TABLE 17.15 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDICATE THE DEGREE OF EMPHASIS GIVEN
TO EACH OF THE FOLLOWING AIMS"

	Great Deal of Emphasis		Moderate Emphasis		Very Little Emphasis		No Emphasis		Not Applicable		TOTAL
	N	%	N	%	N	%	N	%	N	%	
.appreciation and/or understanding of the underlying logical structure of mathematics;	10	28	9	25	10	28	6	17	1	3	36
.in-depth understanding of some area or topic in mathematics;	13	36	10	28	7	19	4	11	2	6	36
.appreciation of the nature and importance of proof in mathematics;	11	31	9	25	8	22	7	19	1	3	36
.appreciation of the contribution of mathematics to civilization;	1	3	6	17	17	47	10	28	2	6	36
.appreciation of the power of math- ematics to solve complex problems;	7	19	16	44	8	22	4	11	1	3	36
.understanding and appreciation of the unity of mathematics through the inter-relationships of its various branches;	3	8	8	22	14	39	9	25	2	6	36
.appreciation of mathematical ele- gance, e.g. in a proof;	9	25	7	19	9	25	9	25	2	6	36
.judgment and discrimination about appropriate procedures and their relevance to solving specific problems;	9	25	13	36	10	28	3	8	1	3	36
.positive attitudes for mathematics;	14	39	14	39	4	11	2	6	2	6	36
.appreciation of mathematics as a human activity aimed at extending man's knowledge, and his under- standing and use of his environment.	7	19	7	19	11	31	8	22	3	8	36

TABLE 17.16

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS	
	MEAN	S.D.
<u>RELATIONS AND FUNCTIONS</u>		
Function as a mapping	1.0	1.0
Inverse of a function	.9	1.0
Graphs and properties of second degree relations using previously known skills	.5	.8
Equations and graphs of conics using focus-directrix definitions	.1	.4
Equations of conics in non-standard positions	.0	.0
Applications	.1	.3
Intersections of lines and conics; e.g., tangents	.2	.5
Intersection of conics and conics	.0	.0
Domain, range, and graph of basic trigonometric functions	1.0	1.0
Standard trigonometric formulae and applications	.6	.8
Trigonometric identity problems and equations	.6	1.2
Phase shift, period, and amplitude	.1	.2
Translations of the plane	.0	.0
Rotations of the plane	.1	.2
Reflections of the plane	.0	.0
Study of general conic	.0	.0
<u>CALCULUS - Elementary</u>		
Limit of a function: intuitive approach via sequences and series	2.6	3.0
Rate of change: slopes, secants, tangents	1.5	1.4
Derivatives of powers, products, and quotients	2.3	1.8
Other derivatives: function of a function, trig functions	2.6	1.8
Applications of derivatives to tangents to curves	1.4	1.1
Further applications: velocity, acceleration	1.4	1.7

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS	
	MEAN	S.D.
Second derivative and its use, curve-tracing	1.5	1.3
Maxima and minima problems	2.6	3.1
Rate of change problems	1.4	1.1
Differential equations; anti-derivatives applied to curves and motion	1.1	1.1
Areas between curves and axes	2.0	2.8
Areas enclosed between curves	1.6	2.9
Volumes of rotation	1.7	2.4
Integration using numerical methods	1.3	1.4
Applications involving complex numbers and/or polar coordinates	1.3	1.9
<u>CALCULUS - Advanced</u>		
The real numbers: axioms, least upper bound, completeness	.7	1.1
Proof by induction	.4	.5
Inequalities	1.1	.9
Notation	.7	.9
Motivation, historical introduction	.4	.7
Definition and algebra of limits	2.0	2.6
Functions: definition, algebra, composition, inverse	1.5	1.1
Continuity: definition, algebra of continuous functions	1.6	1.3
<u>Theorems on continuous functions</u>		
Intermediate value	.5	.7
Extreme value	.6	.7
<u>Derivatives</u>		
Definition and algebra of derivatives	2.2	1.5
Chain rule	1.8	.8
Derivatives of elementary functions	2.1	2.1
<u>Theorems on differentiation</u>		
Rolle	1.1	.8
Mean value	1.5	1.0

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS	
	MEAN	S.D.
<u>Applications of differentiation</u>		
Related rates	1.4	.9
Optimization	1.7	2.2
Graph sketching	2.7	1.9
Scientific examples	1.3	1.5
l'Hôpital's Rule to limits	2.0	1.5
<u>Integration</u>		
Definition of integral and algebraic integration	3.0	2.1
Fundamental Theorem of calculus	1.7	1.1
Mean value theorem (MVT)	.9	.8
Application of MVT to approximation	.4	.6
<u>Techniques of integration</u>		
Substitution	1.8	.9
Trigonometric substitution	2.1	1.6
Parts	1.8	1.1
Partial fractions	1.9	1.3
<u>Applications of integration</u>		
Area	1.6	1.2
Volume	1.8	1.6
Work	.5	.6
Arc Length	1.2	1.0
Improper integrals	1.7	1.3
Taylor's theorem	1.6	1.3
Logarithmic and exponential functions	3.9	2.6
Hyperbolic function	.7	.9
<u>Sequences and series</u>		
Definition and algebra of limits	1.0	1.2
Absolute convergence	.6	.7
Conditional convergence	.6	.7
Basic convergence tests (e.g., ratio, root, integral, monotone).	1.8	1.9
Power series	1.7	1.8
<u>Elementary differential equations</u>		
Separation of variables	1.4	1.4
General linear first order	1.1	1.3
Partial derivatives	1.0	1.4
Gradient	.2	.4

TABLE 17.16 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

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	CALCULUS	
	MEAN	S.D.
Multiple integration	.4	.9
Parametric curves	1.4	1.5
Curvature	.3	.7
Mathematical Modelling	1.0	3.5
<u>ALGEBRA - Vectors</u>		
Definition and properties	.1	.5
Geometric uses	.1	.2
Vectors as ordered pairs, ordered triplets	.1	.2
Linear combinations of vectors	.1	.2
Definition, formulae and algebraic properties of dot product	.1	.5
Projections, unit vectors, applications to physics	.1	.2
<u>Equations of lines</u>		
Vector and linear equations in 2-space	.1	.2
Vector and parametric equations in 3-space	.1	.2
Direction angles, cosines, and numbers	.1	.2
<u>Equations of planes</u>		
Vector, parametric, and linear equations in 3-space	.1	.2
Solution sets of 2 or 3 linear equations	.1	.2
<u>Systems of linear equations</u>		
m equations in n unknowns	.1	.4
Augmented matrix; row reduced echelon form	.1	.4
Solutions in parametric form	.0	.0
Consistency and inconsistency	.1	.4
<u>COMMON TOPICS</u>		
<u>Complex Numbers</u>		
Definitions and field properties	.1	.2
Solutions of quadratic equations	.1	.2
Geometric and polar forms	.1	.2
De Moivre's theorem	.1	.5
<u>Polar Coordinates</u>		
Correspondence and conversion between rectangular, polar, and vector descriptions of point P	.5	.9
Graphing	.7	1.2

TABLE 17.17

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	ALGEBRA	
	MEAN	S.D.
<u>ALGEBRA</u>		
<u>Vectors</u>		
Definition and properties	.3	.6
Geometric uses	.6	1.3
Vectors as ordered pairs, ordered triplets	.3	.6
Linear combinations of vectors	.3	.6
Definition, formulae and algebraic properties of dot product	.6	.7
Projections, unit vectors, applications to physics	.6	1.3
<u>Equations of lines</u>		
Vector and linear equations in 2-space	.3	.5
Vector and parametric equations in 3-space	.9	1.2
Direction angles, cosines, and numbers	.6	1.3
<u>Equations of planes</u>		
Vector, parametric, and linear equations in 3-space	1.4	1.6
Solution sets of 2 or 3 linear equations	.0	.0
<u>Systems of linear equations</u>		
<u>m</u> equations in <u>n</u> unknowns	.6	.7
Augmented matrix; row reduced echelon form	1.6	2.4
Solutions in parametric form	.0	.0
Consistency and inconsistency	.3	.6
<u>SOME COMMON TOPICS</u>		
<u>Matrices and linear transformations</u>		
Matrices: definitions, equations, properties	1.1	1.3
Linear transformations: examples, dot product; etc.	.3	.5
Linear transformations: properties, A^{-1} , non-invertible matrices	.9	1.9
<u>Complex Numbers</u>		
Definitions and field properties	.5	1.0
Solutions of quadratic equations	.0	.0
Geometric and polar forms	.5	1.0
De Moivre's theorem	.5	1.0

TABLE 17.17(Cont'd)

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UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	ALGEBRA	
	MEAN	S.D.
<u>FOUNDATIONS, GENERAL ALGEBRA</u>		
<u>Number theory</u>		
Peano postulates	.0	.0
Mathematical induction	.3	.6
Divisibility: primes, g.c.d., Euclidean Algorithm	3.2	4.3
Congruences	2.6	2.5
Diophantine equations	1.0	2.0
<u>Number systems</u>		
Rationals	.0	.0
Reals	.0	.0
Complex numbers: polar form, Argand diagram	3.3	5.4
Cardinality	.0	.0
<u>Polynomials</u>		
Factorization	.0	.0
Roots: multiple, simple, coefficients	1.4	1.8
Rational functions	1.1	1.3
Partial fractions	1.7	2.4
<u>Groups</u>		
Axioms	.5	1.0
Cyclic Groups	.5	1.0
Permutations	.5	1.0
Transformation groups	.5	1.0
Groups of isometries of figures	.5	1.0
Subgroups and cosets	.5	1.0
Homomorphisms	.5	1.0
Normal subgroups	.5	1.0
Factor groups	.5	1.0
<u>Fields</u>		
\mathbb{Q}, \mathbb{R} .	.3	.5
Ordered field	.0	.0
Finite field	1.0	2.0
Applications	.0	.0

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	ALGEBRA	
	MEAN	S.D.
<u>Combinations</u>		
Sets, subsets	.0	.0
Partitions, combinations and permutations	.6	1.3
Generating function	.6	1.3
Binomial, multinomial theorem	.6	1.3
Finite differences and summation	.6	1.3
Difference equations	.0	.0
Probability	.0	.0
<u>Inequalities</u>		
Arithmetical and geometric means	.6	1.3
Cauchy-Schwartz	.8	1.0
General approach	.0	.0
<u>LINEAR ALGEBRA</u>		
Discussion of two- and three-dimensional spaces	7.2	7.4
Linear combinations and linear independence	3.8	2.7
Spanning set, basis	3.4	1.5
Dimension	2.3	.4
Subspace	2.9	1.6
<u>Linear Operators</u>		
Algebra of linear operators	2.7	1.8
Matrix representation	3.9	2.0
Change of coordinates	2.0	.7
Row echelon form of matrix	2.4	2.0
Systems of linear equations	2.0	.7
Determinants	4.7	3.3
Cramer's method	1.7	.7
Eigenvalues and eigenvectors	5.1	3.3
Jordan canonical form	.5	1.0
Dual spaces, linear functions, dual of an operator	.5	1.0

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	ALGEBRA	
	MEAN	S.D.
<u>Bilinear and quadratic forms</u>		
Diagonalization	1.9	1.7
Signature	.5	1.0
Inner product spaces: basic properties	1.1	1.4
Cross-product	1.4	1.1
Symmetric operator	1.6	1.1
Orthogonal operator	1.4	1.1
Principal axes theorem	1.6	1.1
Linear inequalities	.5	1.0
Linear programming	.5	1.0
Games	.0	.0
<u>Applications of linear algebra</u>		
Geometry	2.2	1.7
Markov processes	.5	1.0
Electric circuits	.0	.0
Vibration problems	.0	.0
<u>Numerical topics</u>		
Solution of linear systems	2.6	5.3
Matrix inversion	1.6	2.5
Iterative solution of equations	.0	.0
Ill-conditioning	.0	.0

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS & LINEAR ALGEBRA	
	MEAN	S.D.
<u>RELATIONS AND FUNCTIONS</u>		
Function as a mapping	.5	.6
Inverse of a function	.5	.6
Graphs and properties of second degree relations using previously known skills	.3	.5
Equations and graphs of conics using focus-directrix definitions	.1	.4
Equations of conics in non-standard positions	.1	.4
Applications	.1	.2
Intersections of lines and conics; e.g., tangents	.0	.0
Intersection of conics and conics	.0	.0
Domain, range, and graph of basic trigonometric functions	.9	1.1
Standard trigonometric formulae and applications	.4	.7
Trigonometric identity problems and equations	.3	.7
Phase shift, period, and amplitude	.0	.0
Translations of the plane	.0	.0
Rotations of the plane	.1	.2
Reflections of the plane	.1	.2
Study of general conic	.1	.2
<u>CALCULUS - Elementary</u>		
Limit of a function: intuitive approach via sequences and series	.9	.9
Rate of change: slopes, secants, tangents	.6	.8
Derivatives of powers, products, and quotients	.7	1.1
Other derivatives: function of a function, trig functions	1.0	1.3
Applications of derivatives to tangents to curves	1.3	1.0
Further applications: velocity, acceleration	.7	.6
Second derivative and its use, curve-tracing	1.1	1.3
Maxima and minima problems	1.2	1.2

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS & LINEAR ALGEBRA	
	MEAN	S.D.
Rate of change problems	.5	.7
Differential equations; anti-derivatives applied to curves and motion	.9	1.0
Areas between curves and axes	.5	.7
Areas enclosed between curves	.5	.7
Volumes of rotation	.2	.4
Integration using numerical methods	.5	.9
Applications involving complex numbers and/or polar coordinates	.3	.9
<u>CALCULUS - Advanced</u>		
The real numbers: axioms, least upper bound, completeness	.5	.5
Proof by induction	1.0	.8
Inequalities	1.3	.7
Notation	.1	.2
Motivation, historical introduction	.3	.6
Definition and algebra of limits	2.5	1.2
Functions: definition, algebra, composition, inverse	1.6	1.2
Continuity: definition, algebra of continuous functions	1.6	.6
<u>Theorems on continuous functions</u>		
Intermediate value	.9	.8
Extreme value	1.2	.8
<u>Derivatives</u>		
Definition and algebra of derivatives	2.5	.8
Chain rule	1.7	.5
Derivatives of elementary functions	2.2	1.9
<u>Theorems on differentiation</u>		
Rolle	1.0	.8
Mean value	1.5	.5
<u>Applications of differentiation</u>		
Related rates	1.8	1.0
Optimization	2.3	1.0
Graph sketching	2.6	1.2
Scientific examples	1.3	1.1
L'Hopital's Rule to limits	1.4	1.0

TABLE 17.18 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS & LINEAR ALGEBRA	
	MEAN	S.D.
<u>Integration</u>		
Definition of integral and algebraic integration	2.5	1.2
Fundamental Theorem of calculus	2.0	.8
Mean value theorem (MVT).	.8	.9
Application of MVT to approximation	1.1	.9
<u>Techniques of integration</u>		
Substitution	2.1	1.0
Trigonometric substitution	2.4	.7
Parts	1.7	.6
Partial fractions	2.3	.9
<u>Applications of integration</u>		
Area	1.9	1.3
Volume	2.3	1.5
Work	.6	.9
Arc length	.7	.9
Improper integrals	.8	.9
Taylor's theorem	1.5	1.3
Logarithmic and exponential functions	2.7	.8
Hyperbolic function	.4	.7
<u>Sequences and series</u>		
Definition and algebra of limits	1.0	1.0
Absolute convergence	.7	.9
Conditional convergence	.6	.8
Basic convergence tests (e.g., ratio, root, integral, monotone).	1.4	1.3
Power series	1.2	1.2
<u>Elementary differential equations</u>		
Separation of variables	1.3	1.0
General linear first order	1.1	1.2
Partial derivatives	.9	1.1
Gradient	.0	.0
Multiple integration	.0	.0
Parametric curves	.2	.6
Curvature	.0	.0
Mathematical Modelling	.8	1.6

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS & LINEAR ALGEBRA	
	MEAN	S.D.
<u>ALGEBRA</u>		
<u>Vectors</u>		
Definition and properties	.1	.4
Geometric uses	.1	.2
Vectors as ordered pairs, ordered triplets	.4	.7
Linear combinations of vectors	.3	.4
Definition, formulae and algebraic properties of dot product	.3	.6
Projections, unit vectors, applications to physics	.1	.3
<u>Systems of linear equations</u>		
m equations in n unknowns	.3	.9
Augmented matrix; row reduced echelon form	.4	.7
Solutions in parametric form	.2	.3
Consistency and inconsistency	.3	.4
<u>SOME COMMON TOPICS</u>		
<u>Matrices and linear transformations</u>		
Matrices: definitions, equations, properties	.5	.9
Linear transformations: examples, dot product, etc.	.1	.2
Linear transformations: properties, A^{-1} , non-invertible matrices	.4	.7
<u>LINEAR ALGEBRA</u>		
Discussion of two- and three-dimensional spaces	2.1	2.8
Linear combinations and linear independence	.9	.9
Spanning set, basis	.9	.9
Dimension	.7	.9
Subspace	.7	1.0

TABLE 17.18 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	CALCULUS & LINEAR ALGEBRA	
	MEAN	S.D.
<u>Linear operators</u>		
Algebra of linear operators	.0	.0
Matrix representation	1.3	2.0
Change of coordinates	.0	.0
Row echelon form of matrix	1.6	1.5
Systems of linear equations	2.5	2.5
Determinants	2.1	1.7
Cramer's method	.7	.9
Eigenvalues and eigenvectors	.6	1.6
Jordan canonical form	.1	.3
Dual spaces, linear functions, dual of an operator	.0	.0

UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	BASIC MATHEMATICS	
	MEAN	S.D.
<u>RELATIONS AND FUNCTIONS</u>		
Function as a mapping	.6	1.0
Inverse of a function	.4	1.0
Graphs and properties of second degree relations using previously known skills	1.1	1.7
Equations and graphs of conics using focus-directrix definitions	3.4	5.1
Equations of conics in non-standard positions	.8	1.7
Applications	.2	.4
Intersections of lines and conics; e.g., tangents	1.7	3.4
Intersection of conics and conics	.2	.4
Domain, range, and graph of basic trigonometric functions	.9	2.0
Standard trigonometric formulae and applications	.7	1.6
Trigonometric identity problems and equations	.4	.8
Phase shift, period, and amplitude	.2	.4
Translations of the plane	.0	.0
Rotations of the plane	.0	.0
Reflections of the plane	.0	.0
Study of general conic	2.3	5.2
<u>CALCULUS - Advanced</u>		
The real numbers: axioms, least upper bound, completeness	4.2	8.9
Proof by induction	.9	2.0
Inequalities	1.2	2.8
Notation	.4	.8
Motivation, historical introduction	.2	.4
Definition and algebra of limits	.0	.0
Functions: definition, algebra, composition, inverse	.4	.8
Continuity: definition, algebra of continuous functions	.0	.0

UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	BASIC MATHEMATICS	
	MEAN	S.D.
<u>ALGEBRA</u>		
<u>Sets, subsets</u>		
Definition and laws of combinations	1.4	2.0
Fundamental counting principles	.2	.4
Permutations	.4	.8
Combinations	.4	.8
<u>Mathematical induction</u>		
Method; use with properties of sigma notation	.4	1.0
Applications and counterexamples	.6	1.0
Binomial Theorem	.5	1.2
<u>Vectors</u>		
Definition and properties	.4	1.0
Geometric uses	.0	.0
Vectors as ordered pairs, ordered triplets	.4	1.0
Linear combinations of vectors	.0	.0
Definition, formulae and algebraic properties of dot product	.4	1.0
Projections, unit vectors, applications to physics	.4	1.0
<u>Equations of lines</u>		
Vector and linear equations in 2-space	1.7	3.4
Vector and parametric equations in 3-space	2.4	3.5
Direction angles, cosines, and numbers	3.2	5.0
<u>Equations of planes</u>		
Vector, parametric, and linear equations in 3-space	1.5	3.4
Solution sets of 2 or 3 linear equations	1.9	3.3
<u>SOME COMMON TOPICS</u>		
<u>Polar Coordinates</u>		
Correspondence and conversion between rectangular, polar, and vector descriptions of point P	2.3	5.2
Graphing	.0	.0

UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	BASIC MATHEMATICS	
	MEAN	S.D.
<u>Logical Reasoning</u>		
Statements, sentences, three basic connectives	.4	.8
Logical connectives and quantifiers and use in proof and disproof	.6	1.0
<u>Mathematics of Investment</u>		
Compound interest and annuities	1.1	2.4
Present value	.5	1.2
Instalment buying and mortgages	.4	.8
Bonds	.2	.4
<u>FOUNDATIONS, GENERAL ALGEBRA</u>		
<u>Number theory</u>		
Peano postulates	.8	1.8
Mathematical induction	2.0	2.0
Divisibility: primes, g.c.d., Euclidean Algorithm	2.5	4.5
Congruences	2.5	4.5
Diophantine equations	1.0	2.3
<u>Number systems</u>		
Rationals	2.1	1.7
Reals	3.5	4.5
Complex numbers: polar form, Argand diagram	2.9	4.5
Cardinality	.7	1.0
<u>Polynomials</u>		
Factorization	1.2	1.7
Roots: multiple, simple, coefficients	1.7	3.0
Rational functions	.2	.4
Partial fractions	.0	.0
<u>Groups</u>		
Axioms	.4	.9
Cyclic Groups	.0	.0
Permutations	.4	.9
Transformation groups	.8	1.8
Groups of isometries of figures	.8	1.8
Subgroups and cosets	.4	.9
Homomorphisms	.4	.9
Normal subgroups	.4	.9

TABLE 17.19 (Cont'd)
 UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	BASIC MATHEMATICS	
	MEAN	S.D.
Factor groups	.4	.9
<u>Fields</u>		
Q,R.	4.1	5.1
Ordered field	1.8	4.0
Finite field	.7	1.5
Applications	.0	.0
<u>Partial ordering</u>		
Boolean algebra	.8	1.8
Applications of Boolean algebra	1.2	2.6
Partially ordered sets	.4	.9
Lattices	.4	.9
Graph theory	.0	.0
<u>Combinations</u>		
Sets, subsets	1.4	1.7
Partitions, combinations and permutations	1.3	1.9
Generating function	.0	.0
Binomial, multinomial theorem	1.1	1.6
Finite differences and summation	.2	.4
Difference equations	.0	.0
Probability	.0	.0
<u>Inequalities</u>		
Arithmetical and geometric means	1.0	1.6
Cauchy-Schwartz	.4	1.0
General approach	.0	.0
<u>LINEAR ALGEBRA</u>		
Discussion of two-and three-dimensional spaces	2.2	3.0
Linear combinations and linear independence	1.1	1.6
Spanning set, basis	.4	.9
Dimension	.4	.9
Subspace	.4	.9

TABLE 17.19 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	BASIC MATHEMATICS	
	MEAN	S.D.
<u>Linear operators</u>		
Algebra of linear operators	.4	.9
Matrix representation	1.4	2.3
Change of coordinates	.4	.9
Row echelon form of matrix	1.4	2.3
Systems of linear equations	2.1	3.7
Determinants	1.9	2.8
Cramer's method	.5	.8
Eigenvalues and eigenvectors	.0	.0
Jordan canonical form	.0	.0
Dual spaces, linear functions, dual of an operator	.0	.0

TABLE 17.20

UNIVERSITY MATHEMATICS YEAR 1 STATISTICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	STATISTICS	
	MEAN	S.D.
<u>CALCULUS - Elementary</u>		
Limit of a function: intuitive approach via sequences and series	.9	1.5
Rate of change: slopes, secants, tangents	.4	.8
Derivatives of powers, products, and quotients	.4	.8
Other derivatives: function of a function, trig functions	.9	1.5
Applications of derivatives to tangents to curves	.4	.8
Further applications: velocity, acceleration	.4	.8
Second derivative and its use, curve-tracing	.9	1.5
Maxima and minima problems	.4	.8
Rate of change problems	.0	.0
Differential equations; anti-derivatives applied to curves and motion	.0	.0
Areas between curves and axes	.4	.8
Areas enclosed between curves	.4	.8
Volumes of rotation	.0	.0
Integration using numerical methods	.9	1.5
Applications involving complex numbers and/or polar coordinates	.0	.0
<u>CALCULUS - Advanced</u>		
<u>Derivatives</u>		
Definition and algebra of derivatives	1.3	2.3
Chain rule	.9	1.5
Derivatives of elementary functions	.9	1.5
<u>Applications of differentiation</u>		
Related rates	.4	.8
Optimization	.9	1.5
Graph sketching	.9	1.5
Scientific examples	.9	1.5
L'Hôpital's Rule to limits	.9	1.5

UNIVERSITY MATHEMATICS YEAR 1 STATISTICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	STATISTICS	
	MEAN	S.D.
<u>Integration</u>		
Definition of integral and algebraic integration	.9	1.5
Fundamental Theorem of calculus	.4	.8
Mean value theorem (MVT).	.0	.0
Application of MVT to approximation	.0	.0
<u>Techniques of integration</u>		
Substitution	1.3	2.3
Trigonometric substitution	1.3	2.3
Parts	.9	1.5
Partial fractions	.9	1.5
<u>Applications of integration</u>		
Area	.9	1.5
Volume	.0	.0
Work	.0	.0
Arc length	.0	.0
Improper integrals	.4	.8
Taylor's theorem	.4	.8
Logarithmic and exponential functions	1.3	2.3
Hyperbolic function	.0	.0
<u>ALGEBRA</u>		
<u>Sets, subsets</u>		
Definition and laws of combinations	1.0	1.8
Fundamental counting principles	1.0	1.8
Permutations	.5	.9
Combinations	.5	.9
<u>Mathematical induction</u>		
Method; use with properties of sigma notation	.5	.9
Applications and counterexamples	.5	.9
Binomial Theorem	.5	.9
<u>PROBABILITY AND STATISTICS</u>		
Simple data collection and representation	.8	1.4
Grouped data, histograms, frequency polygons	1.7	1.5
Measures of central tendency	2.6	2.1
Measures of dispersion	2.6	2.1

TABLE 17.20 (Cont'd)

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UNIVERSITY MATHEMATICS YEAR 1 STATISTICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
PROPORTION OF TIME ALLOCATED TO AREAS OF STUDY

	STATISTICS	
	MEAN	S.D.
Exploratory data analysis: fits and residuals	.0	.0
Sample spaces and events	2.7	.3
Probability of an event	3.6	1.3
Complementary and mutually exclusive events	1.8	.6
Conditional probability and independence	4.7	3.8
Discrete random variables	3.2	1.1
Continuous random variables	1.7	1.5
Mathematical expectation and variance	3.9	4.7
Binomial distribution	2.8	1.6
Poisson distribution	.4	.8
Normal distribution	2.5	2.5
Sampling distributions	3.5	3.8
Central limit theorem	3.8	3.3
Tests and confidence intervals for proportions (1- and 2-sample cases)	5.4	7.3
Tests and confidence intervals for mean (1-sample, 2-sample, equal variances).	3.2	2.8
Comparing two means (variances, unknown and unequal).	1.5	2.6
Inferences about variances of normal populations	.8	1.4
Type I and Type II errors	1.3	1.3
Bayesian inference	.0	.0
Fiducial and structural inference	.0	.0
Direct likelihood inference	.0	.0
Decision theory	.0	.0
Chi-square and contingency tables	2.7	2.5
Nonparametric tests	.0	.0
Confidence intervals	4.9	5.0
Regression and correlation	3.3	5.8
Experimental design	.8	1.4
Analysis of variance	.8	1.4
Survey sampling	.8	1.4
Quality control	.0	.0
Use of random number tables	1.3	1.3
Use of real data sets	.8	1.4
Use of computer in statistical problems	.0	.0

TABLE 17.21

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
<u>RELATIONS AND FUNCTIONS</u>										
Function as a mapping	44	1.8	.8	3.0	.5	3.0	.5	4.2	.7	44
Inverse of a function	56	1.0	.8	2.6	.5	2.5	.7	3.9	.6	50
Graphs and properties of second degree relations using previously known skills	28	1.6	1.3	2.8	.8	3.0	.8	4.0	.6	33
Domain, range, and graph of basic trigonometric functions	39	1.3	1.0	2.9	.8	2.6	.5	3.9	.6	39
Standard trigonometric formulae and applications	28	1.4	1.1	2.5	.8	3.4	.9	3.8	.8	44
Trigonometric identity problems and equations	17	1.7	.8	3.0	.0	3.5	.8	3.8	1.0	33
<u>CALCULUS - Elementary</u>										
Limit of a function: intuitive approach via sequences and series	72	1.2	.7	2.7	.5	2.0	.9	3.2	.6	56
Rate of change: slopes, secants, tangents	61	1.7	.9	3.2	.6	2.1	1.0	3.9	.6	33
Derivatives of powers, products, and quotients	78	2.1	1.0	3.5	.6	2.3	1.2	4.0	.7	33

^aThe means in this table are based on a response key which ranges from 0-No knowledge to 5-Complete mastery; understands theoretical base, and limitations of applicability; can solve non-routine problems of all types. See mathematics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 17.21 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ENTRY			ACTUAL LEVEL EXIT			PREFERRED LEVEL ENTRY			EXIT			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Other derivatives: function of a function, trig functions	83	1.3	.6	3.2	.7	1.8	1.0	4.1	.6	50				
Applications of derivatives to tangents to curves	61	1.7	1.0	3.1	.6	2.1	1.1	3.6	.6	22				
Further applications: velocity, acceleration	61	1.5	.9	3.2	.7	2.3	1.0	3.8	.5	39				
Second derivative and its use, curve-tracing	72	1.1	.6	3.0	.6	1.8	.9	3.8	.6	44				
Maxima and minima problems	78	1.4	.7	3.1	.5	2.0	1.0	3.9	.5	44				
Rate of change problems	67	1.3	.9	2.9	.5	1.8	.9	3.7	.5	28				
Differential equations; anti-derivatives applied to curves and motion	61	.6	.5	2.5	.5	1.2	1.1	3.4	.7	39				
Areas between curves and axes	72	1.2	.6	3.2	.6	1.3	1.1	3.6	.7	22				
Areas enclosed between curves	67	.6	.7	2.9	.5	1.3	1.1	3.6	.7	33				
Volumes of rotation	56	.5	.5	2.7	.5	1.0	1.1	3.3	.5	22				
Integration using numerical methods	56	.4	.5	2.6	.5	.8	1.1	3.1	.6	22				
Applications involving complex numbers and/or polar coordinates	44	.6	.7	2.9	.4	1.4	1.3	3.4	.5	22				

TABLE 17.21 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	EXIT	MEAN	S.D.	EXIT	
<u>CALCULUS - Advanced</u>								
The real numbers: axioms, least upper bound, completeness	39	.3	.5	2.4	.8	.9	3.3	1.0
Proof by induction	39	1.0	.8	3.1	.6	2.1	1.0	3.8
Inequalities	61	1.2	.6	2.9	.7	2.4	1.0	3.8
Notation	33	1.3	.5	2.5	.9	2.0	1.1	3.3
Motivation, historical introduction	28	.4	.6	2.2	.8	.8	.5	2.8
Definition and algebra of limits	67	.8	.7	2.9	.3	1.3	.9	3.8
Functions: definition, algebra, composition, inverse	72	1.5	.8	3.1	.5	2.5	1.1	3.8
Continuity: definition, algebra of continuous functions	72	.8	.6	2.9	.4	1.4	.8	3.5
<u>Theorems on continuous functions</u>								
Intermediate value	44	.4	.7	3.0	.5	1.0	.7	3.3
Extreme value	44	.1	.4	2.8	.5	.8	.7	3.2
<u>Derivatives</u>								
Definition and algebra of derivatives	78	1.9	.9	3.5	.7	2.3	1.1	3.9
Chain rule	83	1.4	.7	3.3	.6	1.8	.9	3.9
Derivatives of elementary functions	67	1.9	.9	3.4	.8	2.2	1.2	3.8
<u>Theorems on differentiation</u>								
Rolle	61	.4	.8	2.7	.7	.7	.8	3.2
Mean value	78	.3	.6	2.6	.7	.6	.8	3.1

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	MEAN	EXIT	MEAN	S.D.	MEAN	EXIT		
<u>Applications of differentiation</u>											
Related rates	72	1.2	.8	2.7	.5	1.6	.9	3.4	.6	44	
Optimization	67	.9	.8	2.7	1.0	1.3	1.1	3.4	.7	39	
Graph sketching	78	1.6	.7	3.2	.7	1.9	1.0	3.8	.6	33	
Scientific examples	56	.9	.9	2.4	1.0	1.4	1.0	3.0	.8	28	
l'Hôpital's Rule to limits	67	.1	.3	2.9	.5	.0	.0	3.3	.5	0	
<u>Integration</u>											
Definition of integral and algebraic integration	83	1.1	.7	2.9	.6	1.2	1.0	3.3	.7	22	
Fundamental Theorem of calculus	78	.5	.7	2.8	.6	1.0	.9	3.5	.5	28	
Mean value theorem (MVT)	61	.0	.0	2.6	.7	.3	.7	3.0	1.0	11	
Application of MVT to approximation	33	.0	.0	2.0	1.0	.4	.7	2.8	1.3	11	
<u>Techniques of integration</u>											
Substitution	78	1.0	.7	2.9	.7	1.1	1.2	3.5	.9	17	
Trigonometric substitution	72	.4	.7	3.1	.5	.6	.8	3.4	.7	6	
Parts	72	.5	.9	3.0	.7	.7	.9	3.3	.9	11	
Partial fractions	78	.1	.5	2.7	.6	.5	.9	3.2	.7	11	
<u>Applications of integration</u>											
Area	67	1.2	.7	3.1	.6	.9	.9	3.3	.7	11	
Volume	67	.3	.7	2.7	.5	.5	.7	3.4	.7	17	
Work	39	.4	.7	2.3	1.0	.4	.5	3.1	.8	11	
Arc length	67	.0	.0	2.6	.7	.1	.3	2.9	.7	6	

TABLE 17.21 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY	S.D.	MEAN	EXIT	ENTRY	S.D.	MEAN	EXIT	
Improper integrals	72	.0	.0	2.7	.6	.1	.3	3.2	.7	6
Taylor's theorem	67	.0	.0	2.3	.7	.2	.4	3.0	1.0	11
Logarithmic and exponential functions	72	1.1	.6	3.0	.6	1.7	.8	3.6	.5	44
Hyperbolic function	44	.0	.0	2.5	1.1	.1	.4	2.9	.9	6
Sequences and series										
Definition and algebra of limits	56	.2	.4	2.3	.7	.4	.9	3.0	.9	11
Absolute convergence	44	.0	.0	2.0	1.0	.0	.0	2.4	1.1	0
Conditional convergence	39	.0	.0	1.9	1.0	.0	.0	2.4	1.3	0
Basic convergence tests (e.g., ratio, root, integral, monotone)	44	.0	.0	2.6	1.0	.0	.0	2.7	1.2	0
Power series	50	.0	.0	2.6	.7	.1	.3	3.0	.7	6
Elementary differential equations										
Separation of variables	61	.0	.0	2.6	.7	.1	.3	2.9	1.2	6
General linear first order	50	.0	.0	2.4	1.0	.0	.0	2.9	1.4	0
Partial derivatives	39	.0	.0	2.6	.8	.0	.0	3.1	.9	0
Gradient	17	.7	1.2	3.3	.6	1.0	1.7	4.0	.0	6
Multiple integration	17	.0	.0	1.8	1.5	.0	.0	3.0	2.0	0
Parametric curves	61	.2	.4	2.6	.7	.5	.9	3.1	.7	17
Curvature	17	.0	.0	1.8	1.3	.0	.0	2.3	1.7	0
Mathematical Modelling	17	.5	.6	2.0	1.4	.8	1.0	2.5	1.7	6

TABLE 17.21 (Cont'd)
 UNIVERSITY MATHEMATICS YEAR 1 CALCULUS
 TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
 OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS	
		EXIT		EXIT		%	
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
<u>SOME COMMON TOPICS</u> Polar Coordinates	28	.8	.5	2.8	.5	1.8	1.3
						3.4	1.1
Correspondence and conversion between rectangular, polar, and vector descriptions of Point P	28	.2	.5	2.2	.5	1.8	1.3
Graphing						3.4	1.1
							22

TABLE 17.22

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS ^b	
		ENTRY	EXIT	ENTRY	EXIT	MEAN	S.D.
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.
<u>RELATIONS AND FUNCTIONS</u>							
Function as a mapping	50	1.5	.7	2.5	.7	3.0	.0
Inverse of a function	25	1.0	.0	3.0	.0	3.0	.0
Equations of conics in non-standard positions	50	1.0	.0	2.5	.7	3.0	.0
Standard trigonometric formulae and applications	25	2.0	.0	3.0	.0	4.0	.0
Trigonometric identity problems and equations	25	2.0	.0	3.0	.0	4.0	.0
Translations of the plane	25	1.0	.0	2.0	.0	3.0	.0
Rotations of the plane	25	1.0	.0	2.0	.0	3.0	.0
Reflections of the plane	25	1.0	.0	2.0	.0	3.0	.0
<u>ALGEBRA</u>							
Vectors	25	1.0	.0	3.0	.0	4.0	.0
Definition and properties	25	1.0	.0	2.0	.0	4.0	.0
Geometric uses	25	1.0	.0	2.0	.0	4.0	.0
Vectors as ordered pairs, ordered triplets	25	1.0	.0	2.0	.0	4.0	.0
Linear combinations of vectors	25	1.0	.0	3.0	.0	4.0	.0
Definition, formulae and algebraic properties of dot product	50	1.5	.7	3.0	.0	3.5	.7

^aThe means in this table are based on a response key which ranges from 0-No knowledge to 5-Complete mastery: understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 17.22 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	EXIT	MEAN	S.D.	EXIT	
Projections, unit vectors, applications to physics	25	1.0	.0	3.0	.0	2.0	4.0	.0
Equations of lines								
Vector and linear equations in 2-space	25	2.0	.0	3.0	.0	3.0	3.0	.0
Vector and parametric equations in 3-space	50	.5	.7	3.0	.0	2.0	3.5	.7
Direction angles, cosines, and numbers	25	1.0	.0	3.0	.0	1.0	4.0	.0
Equations of planes								
Vector, parametric, and linear equations in 3-space	50	.5	.7	3.0	.0	2.0	3.5	.7
Systems of linear equations								
<u>n</u> equations in <u>n</u> unknowns	50	1.5	.7	3.5	.7	2.0	4.0	.0
Augmented matrix; row reduced echelon form	50	1.0	.0	3.5	.7	1.5	4.5	.7
Consistency and inconsistency	25	1.0	.0	3.0	.0	1.0	3.0	.0
SOME COMMON TOPICS								
Matrices and linear transformations								
Matrices: definitions, equations, properties	50	2.5	.7	3.5	.7	2.5	4.5	.7
Linear transformations: examples, dot product, etc.	25	3.0	.0	4.0	.0	2.0	3.0	.0
Linear transformations: properties, A^{-1} , non-invertible matrices	25	2.0	.0	3.0	.0	2.0	4.0	.0

TABLE 17.22 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS
		MEAN	S.D.	ENTRY	MEAN	S.D.	EXIT	
<u>Complex Numbers</u>								
Definitions and field properties	25	2.0	.0	.0	2.0	.0	4.0	.0
Geometric and polar forms	25	1.0	.0	.0	.0	.0	3.0	.0
De Moivre's theorem	25	1.0	.0	.0	1.0	.0	3.0	.0
<u>FOUNDATIONS, GENERAL ALGEBRA</u>								
<u>Number theory</u>								
Mathematical induction	50	.5	.7	2.5	.7	1.5	.7	3.0
Divisibility: primes, g.c.d., Euclidean Algorithm	50	.0	.0	.0	3.5	.7	1.0	1.4
Congruences	75	.0	.0	.0	2.3	.6	.7	.6
Diophantine equations	50	.0	.0	.0	2.0	2.8	.0	2.5
<u>Number systems</u>								
Rationals	25	1.0	.0	.0	1.0	.0	2.0	.0
Reals	25	1.0	.0	.0	1.0	.0	2.0	.0
Complex numbers: polar form, Argand diagram	50	.5	.7	3.0	.0	2.0	.0	3.5
<u>Polynomials</u>								
Factorization	25	1.0	.0	.0	1.0	.0	3.0	.0
Roots: multiple, simple, coefficients	50	1.0	.0	.0	2.5	.7	1.5	.7
Rational functions	50	.5	.7	2.0	1.4	.5	.7	2.5
Partial fractions	50	.5	.7	2.0	1.4	.5	.7	2.5

TABLE 17.22 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	MEAN	S.D.	ENTRY	
Groups								
Axioms	25	.0	.0	.0	.0	.0	3.0	.0
Cyclic Groups	25	.0	.0	.0	.0	.0	3.0	.0
Permutations	25	.0	.0	.0	.0	.0	3.0	.0
Transformation groups	25	1.0	.0	2.0	.0	.0	2.0	.0
Groups of isometries of figures	25	1.0	.0	2.0	.0	.0	2.0	.0
Subgroups and cosets	25	.0	.0	3.0	.0	.0	3.0	.0
Homomorphisms	25	.0	.0	3.0	.0	.0	3.0	.0
Normal subgroups	25	.0	.0	2.0	.0	.0	2.0	.0
Factor groups	25	.0	.0	2.0	.0	.0	2.0	.0
Other topics	-	-	-	-	-	-	-	-
Rings and integral domains								
Axioms	25	.0	.0	3.0	.0	.0	3.0	.0
Examples: Z , polynomials, matrices	25	.0	.0	1.0	.0	.0	1.0	.0
Fields								
Q, R .	50	1.0	1.4	1.5	.7	1.0	1.4	.7
Ordered field	25	.0	.0	.0	.0	.0	1.0	.0
Finite field	50	.0	.0	2.0	1.4	.0	2.0	1.4
Combinations								
Sets, subsets	25	2.0	.0	2.0	.0	.0	.0	.0

TABLE 17.22 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS	
		ENTRY	EXIT	ENTRY	EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.
Partitions, combinations and permutations	50	1.5	.7	2.5	.7	3.5	.7
Generating function	25	.0	.0	3.0	.0	4.0	.0
Binomial, multinomial theorem	50	1.0	.0	2.5	.7	3.5	.7
Finite differences and summation	25	.0	.0	3.0	.0	4.0	.0
Probability	25	1.0	.0	1.0	.0	1.0	.0
<u>Inequalities</u>							
Arithmetical and geometric means	50	.5	.7	2.0	.0	1.5	.7
Cauchy-Schwartz	50	.0	.0	2.0	.0	3.0	.0
General approach	25	.0	.0	1.0	.0	2.0	.0
<u>LINEAR ALGEBRA</u>							
Discussion of two- and three-dimensional spaces	100	.8	1.0	3.0	.8	1.3	1.5
Linear combinations and linear independence	100	.0	.0	2.8	.5	.8	1.0
Spanning set, basis	100	.0	.0	3.0	.8	.8	1.0
Dimension	100	.8	1.0	3.0	.8	.8	1.0
Subspace	100	.0	.0	2.8	.5	.3	.5
<u>Linear operators</u>							
Algebra of linear operators	100	.3	.5	2.3	.5	.3	.5
Matrix representation	100	.5	.6	3.0	.8	.5	1.0
Change of coordinates	100	.5	.6	2.3	.5	1.0	1.2
Row echelon form of matrix	100	.5	.6	3.3	1.0	.8	.5
Systems of linear equations	100	1.3	.5	3.8	1.0	2.3	.5

TABLE 17.22 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Determinants	100	.8	1.0	3.0	.8	1.0	.8	3.8	1.0	25
Cramer's method	75	.8	1.0	2.3	.5	1.0	.8	3.0	.0	25
Eigenvalues and eigenvectors	100	.0	.0	2.8	.5	.0	.0	3.3	.5	0
Jordan canonical form	50	.0	.0	1.0	1.4	.0	.0	1.0	1.4	0
Dual spaces, linear functions, dual of an operator	50	.0	.0	.5	.7	.0	.0	.5	.7	0
<u>Bilinear and quadratic forms</u>										
Diagonalization	50	.0	.0	3.0	.0	.0	.0	3.0	.0	0
Signature	25	.0	.0	3.0	.0	.0	.0	3.0	.0	0
Inner product spaces: basic properties	50	1.0	1.4	2.5	.7	1.0	1.4	3.0	.0	0
Cross-product	75	.0	.0	3.0	.0	.0	.0	3.0	.0	0
Symmetric operator	75	.0	.0	2.0	1.0	.0	.0	2.7	.6	0
Orthogonal operator	75	.0	.0	1.7	.6	.0	.0	2.7	.6	0
Principal axes theorem	75	.0	.0	2.0	1.0	.0	.0	2.7	.6	0
Linear inequalities	25	.0	.0	4.0	.0	1.0	.0	4.0	.0	25
Linear programming	25	.0	.0	4.0	.0	1.0	.0	4.0	.0	25

TABLE 17.22 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
<u>Applications of linear algebra</u>										
Geometry	75	.7	.6	2.0	.0	2.0	.0	3.3	.6	75
Markov processes	25	.0	.0	1.0	.0	.0	.0	1.0	.0	0
<u>Numerical topics</u>										
Solution of linear systems	50	.5	.7	2.0	2.8	1.5	.7	3.0	2.8	50
Matrix inversion	50	.5	.7	2.0	2.8	1.5	.7	3.0	2.8	50
Iterative solution of equations	25	.0	.0	.0	.0	1.0	.0	1.0	.0	25
Ill-conditioning	25	.0	.0	.0	.0	1.0	.0	1.0	.0	25

TABLE 17.23

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS ^b %				
		MEAN ^a	S.D.	ENTRY	EXIT					
RELATIONS AND FUNCTIONS										
Function as a mapping	57	1.8	1.3	2.8	.5	2.5	.6	4.0	.8	57
Inverse of a function	57	1.8	1.5	2.8	.5	2.3	.5	3.8	.5	57
Graphs and properties of second degree relations using previously known skills	29	2.7	2.1	3.0	.0	2.5	.7	4.5	.7	14
Standard trigonometric formulae and applications	29	2.3	1.5	3.0	.0	2.0	.0	4.0	.0	14
CALCULUS - Elementary										
Limit of a function: intuitive approach via sequences and series	71	1.2	1.3	3.0	.7	1.8	.5	4.3	.5	29
Rate of change: slopes, secants, tangents	71	2.2	1.3	3.6	.9	2.5	1.0	4.3	.5	43
Derivatives of powers, products, and quotients	71	2.2	1.3	3.6	.9	2.5	1.0	4.8	.5	43
Other derivatives: function of a function, trig functions	71	2.5	1.3	3.6	.9	2.3	1.3	4.5	.6	29
Applications of derivatives to tangents to curves	86	1.8	1.3	3.2	1.3	2.0	.7	3.8	1.1	43

^aThe means in this table are based on a response key which ranges from 0-No knowledge to 5 Complete mastery: understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 17.23 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
		ENTRY MEAN	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN		
Further applications: velocity, acceleration	71	1.8	1.5	3.0	1.4	2.0	3.8	1.3	43
Second derivative and its use, curve-tracing	71	1.8	1.5	3.2	1.1	1.8	4.3	.5	29
Maxima and minima problems	86	1.7	1.3	3.3	1.0	2.0	4.2	.4	29
Rate of change problems	57	2.0	1.4	3.5	1.0	1.7	4.0	1.0	14
Differential equations; anti- derivatives applied to curves and motion	71	1.2	1.7	3.2	1.1	1.5	3.8	.5	43
Areas between curves and axes	57	1.5	1.3	3.5	1.0	1.3	3.7	.6	14
Areas enclosed between curves	57	1.5	1.3	2.8	.7	1.3	3.7	.6	14
Volumes of rotation	43	1.3	1.5	3.7	1.2	1.0	4.0	.0	14
Integration using numerical methods	43	.7	1.2	2.7	1.5	1.7	3.7	1.5	29

CALCULUS - Advanced

The real numbers: axioms, least
upper bound, completeness

Proof by induction

Inequalities

Notation

Motivation, historical
introduction

TABLE 17.23 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	EXIT	MEAN	S.D.	EXIT		
Definition and algebra of limits	86	.9	.7	2.3	.8	.6	3.6	.8	14
Functions: definition, algebra, composition, inverse	100	1.3	.8	2.7	.8	1.5	3.7	.5	29
Continuity: definition, algebra of continuous functions	100	.4	.5	2.1	.9	1.5	3.3	.5	86
<u>Theorems on continuous functions</u>									
Intermediate value	86	.0	.0	2.2	.4	.8	3.2	.4	43
Extreme value	86	.0	.0	2.2	.4	.8	3.2	.4	43
<u>Derivatives</u>									
Definition and algebra of derivatives	100	2.1	.7	3.6	.8	2.7	4.5	.6	43
Chain rule	100	1.6	1.0	3.3	1.0	2.2	4.3	.5	57
Derivatives of elementary functions	86	2.3	1.0	3.3	1.0	2.4	4.2	.4	29
<u>Theorems on differentiation</u>									
Rolle	86	.2	.4	2.0	.6	.4	3.2	.8	14
Mean value	100	.1	.4	2.1	.7	.5	3.3	.8	14
<u>Applications of differentiation</u>									
Related rates	86	1.7	.8	2.6	.7	2.2	4.0	.7	57
Optimization	100	1.4	.8	2.7	1.1	2.0	3.7	.5	57
Graph sketching	100	1.7	1.0	3.1	.7	2.2	4.0	.0	57
Scientific examples	71	.8	.4	2.4	.9	1.5	4.0	.0	43
l'Hôpital's Rule to limits	71	.2	.4	2.0	1.3	.6	3.0	.0	29

TABLE 17.23 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS		
		MEAN	S.D.	EXIT	ENTRY	S.D.	MEAN	S.D.	%	
Integration										
Definition of integral and algebraic integration	100	.6	.5	2.6	.5	1.2	.8	3.7	.8	43
Fundamental Theorem of calculus	100	.6	.5	2.6	1.0	1.2	.8	3.5	.6	57
Mean value theorem (MVT)	71	.0	.0	2.2	1.1	.8	.5	3.0	.0	43
Application of MVT to approximation	71	.0	.0	2.2	1.3	.8	.5	2.5	.6	43
Techniques of integration										
Substitution	100	1.0	.6	3.0	.6	1.2	.8	3.8	.8	29
Trigonometric substitution	100	.6	.8	3.1	.7	1.0	.9	3.5	.6	29
Parts	100	.6	.5	2.9	.4	.7	.8	3.7	.5	14
Partial fractions	100	.4	.5	2.7	1.0	.8	1.0	3.8	.8	29
Applications of integration										
Area	100	1.4	.5	3.3	1.0	1.8	.4	4.0	.6	29
Volume	86	.8	.4	3.0	.6	1.2	.8	4.0	.7	29
Work	43	.0	.0	1.8	.4	.5	.7	3.5	.7	14
Arc length	57	.0	.0	2.8	.5	.0	.0	3.7	.6	0
Improper integrals	57	.0	.0	2.5	.6	.0	.0	3.3	.6	0
Taylor's theorem	71	.2	.4	2.4	.5	.3	.5	3.5	.6	0
Logarithmic and exponential functions										
	100	1.1	.9	2.9	.7	1.7	1.0	3.7	.5	29
Hyperbolic function	43	.0	.0	2.7	.6	.0	.0	3.5	.7	0
										549

TABLE 17.23 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC	%	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS	
			MEAN	S.D.	ENTRY	MEAN	S.D.	EXIT		
Sequences and series										
Definition and algebra of limits	57		.3	.5	2.3	.5	2.3	.5	.3	.6
Absolute convergence	57		.0	.0	2.5	1.0	.0	.0	3.0	.0
Conditional convergence	57		.0	.0	2.3	1.3	.0	.0	2.7	.6
Basic convergence tests (e.g., ratio, root, integral, monotone)	57		.0	.0	2.8	.5	.0	.0	3.3	.6
Power series	57		.0	.0	2.8	.5	.0	.0	3.3	.6
Elementary differential equations										
Separation of variables	71		.4	.5	2.3	.5	1.0	.8	3.0	.8
General linear first order	57		.0	.0	2.5	1.0	.3	.6	2.7	.6
Partial derivatives	57		.5	1.0	2.5	1.0	.5	1.0	3.0	.8
ALGEBRA										
Mathematical induction										
Method; use with properties of sigma notation	43		1.0	1.0	2.3	1.5	1.5	.7	3.0	.0
Applications and counterexamples	43		1.0	1.0	2.3	1.5	1.5	.7	3.0	.0
Binomial Theorem	43		1.0	1.0	2.3	1.5	1.5	.7	3.0	.0
Vectors										
Vectors as ordered pairs, ordered triplets	43		1.7	2.1	3.3	1.5	2.0	1.4	3.0	.0
Linear combinations of vectors	43		1.3	2.3	3.3	1.5	2.0	1.4	3.0	.0
Definition, formulae and algebraic properties of dot product	43		1.3	2.3	3.3	1.5	2.0	1.4	3.0	.0

TABLE 17.23 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		ENTRY MEAN	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN			
Equations of lines										
Vector and linear equations in 2-space	43	1.7	2.1	3.3	1.5	2.0	1.4	2.5	.7	14
Vector and parametric equations in 3-space	43	1.3	2.3	3.3	1.5	2.0	1.4	2.5	.7	29
Direction angles, cosines, and numbers	29	1.3	2.3	3.0	1.0	1.5	2.1	2.5	.7	14
Equations of planes										
Vector, parametric, and linear equations in 3-space	43	1.3	2.3	3.3	1.5	2.0	1.4	2.5	.7	29
Solution sets of 2 or 3 linear equations	43	1.7	2.1	3.3	1.5	2.0	1.4	3.0	.0	14
Systems of linear equations										
Augmented matrix; row reduced echelon form	43	.0	.0	2.7	1.2	.0	.0	3.0	.0	0
Solutions in parametric form	43	.0	.0	2.7	1.2	.0	.0	3.0	.0	0
Consistency and inconsistency	43	.0	.0	3.0	1.4	.0	.0	3.0	.0	0
SOME COMMON TOPICS										
Matrices and linear transformations										
Matrices: definitions, equations, properties	43	.7	.6	3.0	1.0	.5	.7	2.5	.7	0
Linear transformations: examples, dot product, etc.	29	.3	.6	2.0	2.0	.0	.0	2.5	.7	0
Linear transformations: properties										
A^{-1} , non-invertible matrices	43	.0	.0	3.0	1.0	.0	.0	2.5	.7	0

TABLE 17.23 (Cont'd)

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UNIVERSITY MATHEMATICS YEAR 1 CALCULUS & LINEAR ALGEBRA
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %	
		MEAN	S.D.	EXIT	ENTRY	S.D.	EXIT		
<u>LINEAR ALGEBRA</u>									
Discussion of two- and three- dimensional spaces	71	1.6	1.1	2.8	1.3	1.8	4.0	.8	29
Linear combinations and linear independence	43	.3	.6	2.7	1.5	.5	3.5	.7	14
Spanning set, basis	43	.3	.6	2.7	1.5	.5	3.5	.7	14
Dimension	43	.3	.6	2.3	1.5	.5	3.0	.0	14
<u>Linear operators</u>									
Matrix representation	57	.8	1.0	2.8	1.9	1.3	3.7	.6	14
Row echelon form of matrix	71	.4	.5	3.0	1.0	1.3	4.0	.8	43
Systems of linear equations	71	1.0	1.0	3.2	.8	1.8	4.3	1.0	29
Determinants	71	.4	.5	3.2	.4	1.0	3.8	1.0	29
Cramer's method	43	.0	.0	2.3	2.1	.5	4.0	1.4	14

TABLE 17.24

UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY		EXIT		ENTRY		EXIT		
		MEAN ^a	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
<u>RELATIONS AND FUNCTIONS</u>										
Function as a mapping	40	1.5	.7	3.0	.0	2.0	.0	3.5	.7	20
Inverse of a function	40	1.5	.7	2.5	.7	1.5	.7	3.5	.7	0
Graphs and properties of second degree relations using previously known skills	40	1.0	.0	3.0	.0	1.0	.0	4.0	.0	0
Equations and graphs of conics using focus-directrix definitions	40	1.0	.0	3.0	.0	1.0	.0	4.0	.0	0
Equations of conics in non-standard positions	20	.5	.7	2.0	1.4	.5	.7	2.0	.0	0
Intersections of lines and conics; e.g., tangents	40	.5	.7	3.5	.7	.5	.7	4.0	.0	0
Study of general conic	20	.0	.0	1.5	2.1	.0	.0	2.0	2.8	0
<u>ALGEBRA</u>										
Sets, subsets										
Definition and laws of combinations	40	2.0	1.4	3.5	.7	2.5	.7	4.0	.0	20
<u>Mathematical induction</u>										
Method; use with properties of sigma notation	20	1.5	.7	2.0	1.4	1.5	.7	2.5	2.1	0
Applications and counterexamples	20	1.5	.7	2.0	1.4	1.5	.7	2.5	2.1	0

^aThe means in this table are based on a response key which ranges from 0-No knowledge to 5-Complete mastery: understands theoretical base, and limitations of applicability, can solve non-routine problems of all types. See mathematics questionnaire for details.

^bThe figures in this column are derived by determining the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 17.24 (Cont'd)

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UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT		
<u>Vectors</u>											
Definition and properties	20	1.5	.7	2.0	1.4	1.5	.7	2.5	2.1	0	
Vectors as ordered pairs, ordered triplets	20	2.0	1.4	2.5	2.1	2.0	1.4	2.5	2.1	0	
Projections, unit vectors, applications to physics	20	1.0	.0	2.0	1.4	1.0	.0	2.0	1.4	0	
<u>Equations of lines</u>											
Vector and linear equations in 2-space	40	1.5	.7	2.5	.7	1.5	.7	3.0	1.4	0	
Vector and parametric equations in 3-space	40	.7	1.2	2.0	1.7	.7	1.2	2.3	2.1	0	
Direction angles, cosines, and numbers	40	.0	.0	2.0	1.7	.7	1.2	2.3	2.1	20	
<u>Equations of planes</u>											
Vector, parametric, and linear equations in 3-space	20	.0	.0	1.5	2.1	1.0	1.4	2.0	2.8	20	
Solution sets of 2 or 3 linear equations	40	1.5	.7	3.5	.7	1.5	.7	3.5	.7	0	
<u>FOUNDATIONS, GENERAL ALGEBRA</u>											
<u>Number theory</u>											
Peano postulates	20	.5	.7	2.0	1.4	.5	.7	2.0	1.4	0	
Mathematical induction	40	1.3	.6	2.3	1.2	1.7	.6	2.7	1.5	20	
Divisibility: primes, g.c.d., Euclidean Algorithm	20	.5	.7	1.5	.7	.5	.7	1.5	.7	0	
Congruences	20	.5	.7	1.5	.7	.5	.7	1.5	.7	0	

TABLE 17.24 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %
		ENTRY MEAN	S.D.	EXIT MEAN	ENTRY MEAN	S.D.	EXIT MEAN	
<u>Number Systems</u>								
Rationals	60	1.7	.6	3.3	2.0	.6	3.7	20
Reals	60	1.0	1.0	3.0	1.0	1.0	3.7	0
Complex numbers: polar form, Argand diagram	20	.5	.7	2.0	.5	.7	2.5	20
Cardinality	20	.0	.0	1.0	.5	.7	1.5	20
<u>Groups</u>								
Axioms	20	.5	.7	2.0	.5	.7	2.0	0
Cyclic Groups	20	.5	.7	1.5	.5	.7	1.5	0
Permutations	20	.5	.7	2.0	1.0	.0	2.0	20
Transformation groups	20	1.0	.0	2.0	1.0	.0	2.0	0
Groups of isometries of figures	20	.0	.0	1.5	.0	.0	1.5	0
Subgroups and cosets	20	.0	.0	1.5	.0	.0	1.5	0
Homomorphisms	20	.0	.0	1.5	.0	.0	1.5	0
Normal subgroups	20	.0	.0	1.5	.0	.0	1.5	0
Factor groups	20	.0	.0	1.5	.0	.0	1.5	0
<u>Rings and integral domains</u>								
Examples: \mathbb{Z} , polynomials, matrices	20	1.0	1.4	1.5	1.0	1.4	2.0	0
<u>Fields</u>								
\mathbb{Q}/\mathbb{R} .	40	1.0	1.0	2.0	.7	.6	3.5	0
Ordered field	20	.0	.0	1.5	.0	.0	4.0	0

TABLE 17.24 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 BASIC MATHEMATICS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS %
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT	
Partial ordering										
Boolean algebra	20	.0	.0	.0	1.5	2.1	.7	.5	3.0	.0
Applications of Boolean algebra	20	.0	.0	.0	1.5	2.1	.7	.5	3.0	.0
Partially ordered sets	20	.0	.0	.0	1.5	2.1	.0	.0	3.0	.0
Lattices	20	.0	.0	.0	1.5	2.1	.0	.0	3.0	.0
Combinations										
Sets, subsets	60	2.0	.0	.0	3.3	.6	.6	2.3	4.0	.0
Partitions, combinations and permutations	40	1.0	1.4	1.4	3.5	.7	.7	1.5	3.5	.7
LINEAR ALGEBRA										
Discussion of two- and three-dimensional spaces	20	1.0	1.4	1.4	1.5	2.1	2.1	1.5	5.0	.0
Linear combinations and linear independence	20	.5	.7	.7	1.5	2.1	1.4	1.0	3.0	.0
Spanning set, basis	20	.5	.7	.7	1.5	2.1	1.4	1.0	3.0	.0
Dimension	20	.5	.7	.7	1.5	2.1	2.1	1.5	4.0	.0
Subspace	20	.5	.7	.7	1.5	2.1	2.1	1.5	4.0	.0
Linear operators										
Algebra of linear operators	20	.0	.0	.0	1.5	2.1	1.4	1.0	4.0	.0
Matrix representation	20	.0	.0	.0	1.5	2.1	1.4	1.0	4.0	.0
Change of coordinates	20	.0	.0	.0	1.5	2.1	.7	.5	3.0	.0
Row echelon form of matrix	20	.0	.0	.0	1.5	2.1	.7	.5	3.0	.0
Systems of linear equations	20	.0	.0	.0	1.5	2.1	1.4	1.0	4.0	.0

TABLE 17.25

UNIVERSITY MATHEMATICS YEAR 1 STATISTICS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL		PREFERRED LEVEL		DISSATISFACTION WITH INCOMING STUDENTS ^b %
		ENTRY MEAN ^a	EXIT S.D.	ENTRY MEAN	EXIT S.D.	
<u>RELATIONS AND FUNCTIONS</u>						
Function as a mapping	33	.0	1.0	.0	3.0	0
<u>CALCULUS - Elementary</u>						
Limit of a function: intuitive approach via sequences and series	33	2.0	3.0	2.0	3.0	0
Rate of change: slopes, secants, tangents	33	2.0	3.0	2.0	3.0	0
Derivatives of powers, products, and quotients	33	2.0	4.0	2.0	3.0	0
Other derivatives: function of a function, trig functions	33	2.0	4.0	1.0	3.0	0
Applications of derivatives to tangents to curves	33	2.0	3.0	1.0	3.0	0
Further applications: velocity, acceleration	33	2.0	3.0	1.0	3.0	0
Second derivative and its use, curve-tracing	33	1.0	3.0	1.0	3.0	0
Maxima and minima problems	33	1.0	3.0	.0	3.0	0
Areas between curves and axes	33	1.0	3.0	.0	1.0	0
Areas enclosed between curves	33	1.0	3.0	1.0	3.0	33
Integration using numerical methods	33	1.0	3.0	1.0	3.0	0

^aThe means in this table are based on response key which rates from 0-No knowledge to 5-Complete mastery: understands theoretical base, and limitations in detail.

^bThe figures in this column are determined by the percentage of instructors who would prefer a higher average level of competence of incoming students than students actually have.

TABLE 17.25(Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 STATISTICS

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS		
		MEAN	S.D.	EXIT	ENTRY	MEAN	S.D.	EXIT	MEAN	S.D.
<u>CALCULUS - Advanced</u>										
<u>Derivatives</u>										
Definition and algebra of derivatives	33	2.0	.0	4.0	.0	2.0	.0	4.0	.0	0
Chain rule	33	2.0	.0	3.0	.0	2.0	.0	4.0	.0	0
Derivatives of elementary functions	33	2.0	.0	4.0	.0	2.0	.0	4.0	.0	0
<u>Applications of differentiation</u>										
Related rates	33	1.0	.0	3.0	.0	.0	.0	3.0	.0	0
Optimization	33	1.0	.0	3.0	.0	.0	.0	3.0	.0	0
Graph sketching	33	1.0	.0	3.0	.0	1.0	.0	3.0	.0	0
Scientific examples	33	.0	.0	2.0	.0	.0	.0	2.0	.0	0
l'Hôpital's Rule to limits	33	.0	.0	3.0	.0	.0	.0	3.0	.0	0
<u>Integration</u>										
Definition of integral and algebraic integration	33	.0	.0	2.0	.0	.0	.0	3.0	.0	0
Fundamental Theorem of calculus	33	1.0	.0	3.0	.0	.0	.0	3.0	.0	0
<u>Techniques of integration</u>										
Substitution	33	.0	.0	3.0	.0	.0	.0	3.0	.0	0
Trigonometric substitution	33	.0	.0	3.0	.0	.0	.0	3.0	.0	0
Parts	33	.0	.0	3.0	.0	.0	.0	3.0	.0	0
Partial fractions	33	.0	.0	3.0	.0	.0	.0	3.0	.0	0
<u>Applications of integration</u>										
Area	33	1.0	.0	3.0	.0	.0	.0	3.0	.0	0

TABLE 17.25 (Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 STATISTICS

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT		
Improper integrals	33	.0	.0	.0	2.0	.0	.0	.0	3.0	.0	0
Taylor's theorem	33	.0	.0	.0	2.0	.0	.0	.0	3.0	.0	0
Logarithmic and exponential functions	33	1.0	.0	.0	3.0	.0	.0	.0	3.0	.0	0
ALGEBRA											
Sets, subsets											
Definition and laws of combinations	33	.0	.0	.0	3.0	.0	.0	.0	4.0	.0	0
Fundamental counting principles	33	.0	.0	.0	3.0	.0	.0	.0	4.0	.0	0
Permutations	33	1.0	.0	.0	3.0	.0	.0	.0	4.0	.0	0
Combinations	33	1.0	.0	.0	3.0	.0	.0	.0	4.0	.0	0
Mathematical induction											
Method; use with properties of sigma notation	33	.0	.0	.0	4.0	.0	.0	.0	4.0	.0	0
Applications and counterexamples	33	.0	.0	.0	1.0	.0	.0	.0	2.0	.0	0
Binomial Theorem	33	1.0	.0	.0	3.0	.0	.0	.0	4.0	.0	0
FOUNDATIONS, GENERAL ALGEBRA											
Combinations											
Sets, subsets	33	.0	.0	.0	3.0	.0	.0	.0	4.0	.0	0
PROBABILITY AND STATISTICS											
Simple data collection and representation	33	1.0	.0	.0	4.0	.0	1.0	.0	4.0	.0	33
Grouped data, histograms, frequency polygons	67	.0	.0	.0	3.5	.7	.5	.7	3.5	.7	33

TABLE 17.25 (Cont'd)

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UNIVERSITY MATHEMATICS YEAR 1 STATISTICS
TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS
OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL			PREFERRED LEVEL			DISSATISFACTION WITH INCOMING STUDENTS %		
		MEAN	S.D.	EXIT	ENTRY	S.D.	EXIT			
Measures of central tendency	100	.0	.0	2.7	1.5	.3	.6	2.7	1.5	33
Measures of dispersion	100	.0	.0	2.7	1.5	.3	.6	2.7	1.5	33
Sample spaces and events	100	.0	.0	3.3	.6	.3	.6	3.7	.6	33
Probability of an event	100	.7	.6	3.0	.0	.3	.6	3.7	.6	0
Complementary and mutually exclusive events	100	.3	.6	3.0	.0	.3	.6	3.7	.6	0
Conditional probability and independence	100	.0	.0	2.7	.6	.3	.6	3.7	.6	33
Discrete random variables	100	.0	.0	3.0	.0	.3	.6	3.7	.6	33
Continuous random variables	67	.0	.0	3.0	.0	.5	.7	3.5	.7	33
Mathematical expectation and variance	67	.0	.0	3.5	.7	.0	.0	3.5	.7	0
Binomial distribution	100	.0	.0	3.0	.0	.3	.6	3.7	.6	33
Poisson distribution	67	.0	.0	1.5	2.1	.5	.7	3.5	.7	33
Normal distribution	100	.3	.6	2.7	.6	.3	.6	3.0	1.0	33
Sampling distributions	67	.0	.0	2.5	.7	.5	.7	3.5	.7	33
Central limit theorem	100	.3	.6	2.7	.6	.3	.6	3.7	1.5	33
Tests and confidence intervals for proportions (1 - and 2 - sample cases)	67	.0	.0	2.5	.7	.5	.7	4.0	.0	33

TABLE 17.25(Cont'd)

UNIVERSITY MATHEMATICS YEAR 1 STATISTICS

TEACHERS' RATING OF ACTUAL AND PREFERRED LEVELS

OF "AVERAGE LEVEL OF COMPETENCE OF STUDENTS" AT ENTRY AND EXIT OF COURSE

SPECIFIC OBJECTIVES	INSTRUCTORS TEACHING TOPIC %	ACTUAL LEVEL				PREFERRED LEVEL				DISSATISFACTION WITH INCOMING STUDENTS	
		MEAN	S.D.	ENTRY	EXIT	MEAN	S.D.	ENTRY	EXIT		
Tests and confidence intervals for mean (1-sample, 2-sample, equal variances)	67	.0	.0	2.0	1.4	.5	.7	3.5	.7	33	
Comparing two means (variances, unknown and unequal)	33	.0	.0	1.0	.0	.0	.0	2.0	.0	0	
Inferences about variances of nor- mal populations	33	.0	.0	3.0	.0	1.0	.0	4.0	.0	33	
Type I and Type II errors	67	.0	.0	3.0	.0	.5	.7	4.0	.0	33	
Chi-square and contingency tables	67	.0	.0	3.5	.7	.5	.7	4.0	.0	33	
Confidence intervals	67	.0	.0	3.0	.0	.5	.7	4.0	.0	33	
Regression and correlation	33	.0	.0	3.0	.0	1.0	.0	4.0	.0	33	
Experimental design	33	.0	.0	3.0	.0	1.0	.0	4.0	.0	33	
Analysis of variance	33	.0	.0	3.0	.0	1.0	.0	4.0	.0	33	
Survey sampling	33	.0	.0	3.0	.0	1.0	.0	4.0	.0	33	
Use of random number tables	67	.0	.0	2.5	2.1	.5	.7	3.0	1.4	33	
Use of real data sets	33	.0	.0	3.0	.0	1.0	.0	4.0	.0	33	

TABLE 18.1
SECONDARY SCHOOL MATHEMATIQUES YEAR 4 GENERAL
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS															TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+		
Enseignement au niveau secondaire	0	0	0	1	1	1	2	2	1	1	0	2	1	1	13	
Enseignement ce cours (ou son équivalent)	0	5	1	4	1	0	0	0	0	1	1	0	0	0	13	

TABLE 18.2
SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 4 GENERAL	
	N	%
Non	7	54
Elémentaire	6	46
Collégial	0	0
Universitaire	0	0
Autre niveau	0	0
Plus d'un niveau	0	0
Total	13	100

TABLE 18.3

SECONDARY SCHOOL MATHEMATIQUES YEAR 4 ADVANCED
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS														TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	
Enseignement au niveau secondaire	0	0	1	2	0	0	2	3	2	1	0	1	1	1	14
Enseignement ce cours (ou son équivalent)	0	3	3	2	3	0	0	0	1	0	1	1	0	0	14

TABLE 18.4

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 4 AVANCE	
	N	%
Non	12	86
Elémentaire	1	7
Collégial	1	7
Universitaire	0	0
Autre niveau	0	0
Plus d'un niveau	0	0
Total	14	100

TABLE 18.5
SECONDARY SCHOOL MATHEMATIQUES YEAR 5 RELATIONS ET FONCTIONS
TEACHERS' PROFESSIONAL EXPERIENCE

	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	TOTAL
Enseignement au niveau secondaire	0	1	0	1	1	1	2	0	3	0	1	1	0	2	13
Enseignement ce cours (ou son équivalent)	0	6	2	1	1	2	0	1	0	0	0	0	0	0	13

TABLE 18.6
SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	N	%
Non	7	54
Elémentaire	5	38
Collégial	0	0
Universitaire	0	0
Autre niveau	0	0
Plus d'un niveau	1	8
Total	13	100

TABLE 18.7
SECONDARY SCHOOL MATHEMATIQUES YEAR 5 CALCUL
TEACHERS' PROFESSIONAL EXPERIENCE

	LE NOMBRE DES ANS																TOTAL
	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+			
Enseignement au niveau secondaire	0	0	1	0	1	1	0	2	0	1	1	4	0	1	12		
Enseignement ce cours (ou son équivalent)	0	2	3	0	1	2	0	2	0	2	0	0	0	0	12		

TABLE 18.8
SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 5		CALCUL	
	N		%	
Non	9		75	
Elémentaire	1		8	
Collégial	0		0	
Universitaire	0		0	
Autre niveau	0		0	
Plus d'un niveau	2		17	
Total	12		100	

TABLE 18.9
SECONDARY SCHOOL MATHEMATIQUES YEAR 5 ALGEBRE
TEACHERS' PROFESSIONAL EXPERIENCE

	0	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21+	TOTAL
Enseignement au niveau secondaire	0	0	0	1	0	1	2	1	2	0	0	3	1	0	11
Enseignement ce cours (ou son équivalent)	0	4	3	1	1	0	2	0	0	0	0	0	0	0	11

TABLE 18.10
SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"AVEZ-VOUS ENSEIGNE A UN AUTRE NIVEAU?"

	L'AN 5 ALGEBRE	
	N	%
Non	9	82
Elémentaire	1	9
Collégial	0	0
Universitaire	1	9
Autre niveau	0	0
Plus d'un niveau	0	0
Total	11	100

TABLE 18.11
SECONDARY SCHOOL MATHEMATIQUES
DIPLOMES LES PLUS ELEVES DES PROFESSEURS

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Doctorat	0	0	0	0
Maitrise	2	16	0	0
Baccalaureat specialise	5	38	6	43
Baccalaureat general	5	38	6	43
Certificat post-secondaire	0	0	0	0
Autre diplome	1	8	2	14
Total	13	100	14	100

TABLE 18.12
SECONDARY SCHOOL MATHEMATIQUES
CATEGORIE DE L'OSSTF OU DE L'AEFO

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Categorie 1/A1	2	15	1	7
Categorie 2/A2	3	23	7	50
Categorie 3/A3	0	0	0	0
Categorie 4/A4	8	61	6	43
Total	13	100	14	100

TABLE 18.13
SECONDARY SCHOOL MATHEMATIQUES
LE POSTE DU PROFESSEUR DANS L'ECOLE

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Directeur	0	0	0	0
Directeur adjoint	0	0	0	0
Chef de departement	1	8	2	14
Chef adjoint	1	8	1	7
Professeur	10	76	11	79
Autre poste	1	8	0	0
Total	13	100	14	100

TABLE 18.14
SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"CE COURS A-T-IL UN LIEN QUELCONQUE AVEC
VOTRE DOMAINE DE SPECIALISATION?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Oui, il s'inscrit dans mon domaine de specialisation	9	70	12	86
Oui, il s'y rattache indirectement	2	15	1	7
Non	2	15	1	7
Total	13	100	14	100

TABLE 18.15

SECONDARY SCHOOL MATHEMATIQUES
DIPLOMES LES PLUS ELEVES DES PROFESSEURS

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGEBRE	
	N	%	N	%	N	%
Doctorat	-	-	-	-	-	-
Maîtrise	2	15	1	8	2	18
Baccalauréat spécialisé	6	46	6	50	6	55
Baccalauréat général	4	31	4	34	3	27
Certificat post-secondaire	-	-	-	-	-	-
Autre diplôme	1	8	1	8	-	-
Total	13	100	12	100	11	100

TABLE 18.16

SECONDARY SCHOOL MATHEMATIQUES
CATEGORIE DE L'OSSTF OU DE L'AEFO

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGEBRE	
	N	%	N	%	N	%
Catégorie 1/A1	1	8	-	-	-	-
Catégorie 2/A2	3	23	3	25	1	9
Catégorie 3/A3	2	15	-	-	-	-
Catégorie 4/A4	7	54	9	75	10	91
Total	13	100	12	100	11	100

TABLE 18.17

SECONDARY SCHOOL MATHEMATIQUES
LE POSTE DU PROFESSEUR DANS L'ECOLE

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGEBRE	
	N	%	N	%	N	%
Directeur	-	-	-	-	-	-
Directeur adjoint	-	-	1	8	-	-
Chef de département	3	23	2	17	6	55
Chef adjoint	2	15	3	25	2	18
Professeur	8	62	6	50	3	27
Autre poste	-	-	-	-	-	-
Total	13	100	12	100	11	100

TABLE 18.18

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"CE COURS A-T-IL UN LIEN QUELCONQUE AVEC
VOTRE DOMAINE DE SPECIALISATION?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGEBRE	
	N	%	N	%	N	%
Oui, il s'inscrit dans mon domaine de spécialisation	10	77	11	92	10	91
Oui, il s'y rattache indirectement	1	8	1	8	-	-
Non	2	15	-	-	1	9
Total	13	100	12	100	11	100

TABLE 18.19

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NOI		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Intérêts des étudiants	6	46	4	31	3	23	-	-	-	-	13
Connaissance du sujet par les étudiants	6	47	2	15	3	23	2	15	-	-	13
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	1	7	3	23	4	31	5	39	-	-	13
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours.	2	15	7	54	2	15	2	15	-	-	13
Programme-cadre du Ministère de l'éducation de l'Ontario	4	31	5	39	2	16	1	7	1	7	13
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	4	31	2	15	3	23	3	23	1	8	13
Votre propre intérêt pour la matière enseignée et/ou votre formation	6	46	1	8	4	30	1	8	1	8	13
Contenu et orientation du (des) manuel(s) de base	1	8	5	38	3	23	3	23	1	8	13
Corps enseignant	2	15	1	8	1	8	6	46	3	23	13

TABLE 18.20
SECONDARY SCHOOL MATHEMATIQUES YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCÉ DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP		MODÉRE- MENT		UN PEU		PAS DU TOUT		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Intérêts des étudiants	3	22	9	64	2	14	-	-	-	-	14
Connaissance du sujet par les étudiants	4	28	6	43	3	22	1	7	-	-	14
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	1	7	4	29	6	43	2	14	1	7	14
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours.	6	43	4	29	3	21	1	7	-	-	14
Programme-cadre du Ministère de l'éducation de l'Ontario	6	43	5	36	3	21	-	-	-	-	14
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	4	29	2	14	4	29	3	21	1	7	14
Votre propre intérêt pour la matière enseignée et/ou votre formation	10	72	2	14	2	14	-	-	-	-	14
Contenu et orientation du (des) manuel(s) de base	7	50	5	36	1	7	1	7	-	-	14
Corps enseignant	1	11	2	22	1	11	2	22	3	34	9
Autres facteurs	-	-	1	20	-	-	2	40	2	40	5

TABLE 18.21
SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS ET FONCTIONS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	PERTINENT	N %	
Intérêts des étudiants	6	46	4	31	2	16	1	7	-	-	13
Connaissance du sujet par les étudiants	6	46	2	15	5	39	-	-	-	-	13
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	-	-	4	31	6	46	3	23	-	-	13
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	-	-	7	59	3	25	1	8	1	8	12
Programme-cadre du Ministère de l'éducation de l'Ontario	10	77	3	23	-	-	-	-	-	-	13
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	3	25	1	8	2	17	5	42	1	8	12
Votre propre intérêt pour la matière enseignée et/ou votre formation	8	62	5	38	-	-	-	-	-	-	13
Contenu et orientation du (des) manuel(s) de base	9	69	1	8	1	8	2	15	-	-	13
Corps enseignant	-	-	-	-	1	8	8	67	3	25	12
Autres facteurs	1	17	-	-	-	-	5	83	-	-	6

TABLE 18.22

SECONDARY SCHOOL MATHEMATIQUES YEAR 5 CALCUL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	PERTINENT	N %	
Intérêts des étudiants	4	33	7	59	-	-	1	8	-	-	12
Connaissance du sujet par les étudiants	6	50	4	33	-	-	2	17	-	-	12
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	3	25	4	33	4	33	1	9	-	-	12
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	5	42	1	8	2	17	4	33	-	-	12
Programme-cadre du Ministère de l'éducation de l'Ontario	7	58	4	33	-	-	1	9	-	-	12
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	3	25	2	17	2	17	2	17	3	25	12
Votre propre intérêt pour la matière enseignée et/ou votre formation	8	67	4	33	-	-	-	-	-	-	12
Contenu et orientation du (des) manuel(s) de base	3	25	5	42	2	17	1	8	1	8	12
Corps enseignant	-	-	2	17	3	25	5	41	2	17	12

TABLE 18.23

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ SI LES FACTEURS SUIVANTS VOUS ONT
INFLUENCE DANS L'ENSEIGNEMENT DU COURS?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	PERTINENT	N	
Intérêts des étudiants	3	27	2	18	4	37	2	18	-	-	11
Connaissance du sujet par les étudiants	2	18	4	36	1	9	4	36	-	-	11
Rapport entre ce cours et d'autres cours suivis en même temps par les étudiants	4	37	3	27	3	27	1	9	-	-	11
Renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours	4	36	4	36	2	18	1	9	-	-	11
Programme-cadre du Ministère de l'éducation de l'Ontario	8	72	1	9	1	9	1	9	-	-	11
Directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique)	1	9	2	18	2	18	3	27	3	27	11
Votre propre intérêt pour la matière enseignée et/ou votre formation	7	64	3	27	1	9	-	-	-	-	11
Contenu et orientation du (des) manuel(s) de base	3	27	6	55	1	9	1	9	-	-	11
Corps enseignant	-	-	2	18	1	9	7	64	1	9	11
Autres facteurs	-	-	1	9	-	-	8	73	2	18	11

TABLE 18.24

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EXISTE-T-IL DES COURS PRE-REQUIS
(RECOMMANDES AU NIVEAU SECONDAIRE)?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Oui	12	92	12	85
Non	1	8	2	15
Total	13	100	14	100

TABLE 18.25

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"D'APRES VOUS, EST-CE QUE LES ETUDIANTS ETAIENT BIEN PREPARES
A SUIVRE VOTRE COURS?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Oui, très bien	1	8	2	14
Oui, assez bien	5	38	7	50
Oui, bien	4	31	3	22
Non, pas suffisamment	3	23	2	14
Total	13	100	14	100

TABLE 18.26

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"QUELLE EST L'IMPORTANCE DE L'ECART QUI DIFFERENCIE LES ETUDIANTS
AU DEBUT DE VOTRE COURS?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Ecart important	7	54	4	28
Ecart acceptable	5	38	7	51
Ecart négligeable	1	8	3	21
Impossible d'en juger	-	-	-	-
Total	13	100	14	100

TABLE 18.27

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"A QUEL POINT EST-CE QUE CE COURS PERMET AUX ETUDIANTS
DE FAIRE DU PROGRES A UN RYTHME INDIVIDUEL?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Beaucoup	-	-	-	-
Modérément	-	-	-	-
Un peu	2	15	-	-
Pas du tout	11	85	14	100
Total	13	100	14	100

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"EXISTE-T-IL DES COURS PRÉ-REQUIS
(RECOMMANDÉS AU NIVEAU SECONDAIRE)?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGÈBRE	
	N	%	N	%	N	%
Oui	12	92	12	100	10	92
Non	1	8	-	-	1	8
Total	13	100	12	100	11	100

TABLE 18.29

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"D'APRÈS VOUS, EST-CE QUE LES ÉTUDIANTS ÉTAIENT BIEN PRÉPARÉS
À SUIVRE VOTRE COURS?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGÈBRE	
	N	%	N	%	N	%
Oui, très bien	1	8	1	8	3	27
Oui, assez bien	8	61	8	67	5	46
Oui, bien	4	31	3	25	2	18
Non, pas suffisamment	-	-	-	-	1	9
Total	13	100	12	100	11	100

TABLE 18.30

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"QUELLE EST L'IMPORTANCE DE L'ÉCART QUI DIFFÉRENCIE LES ÉTUDIANTS
AU DÉBUT DE VOTRE COURS?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGÈBRE	
	N	%	N	%	N	%
Ecart important	5	38	3	25	2	18
Ecart acceptable	7	54	9	75	7	63
Ecart négligeable	1	8	-	-	2	18
Impossible d'en juger	-	-	-	-	-	-
Total	13	100	12	100	11	99

TABLE 18.31

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"À QUEL POINT EST-CE QUE CE COURS PERMET AUX ÉTUDIANTS
DE FAIRE DU PROGRÈS À UN RYTHME INDIVIDUEL?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGÈBRE	
	N	%	N	%	N	%
Beaucoup	-	-	-	-	-	-
Modérément	-	-	-	-	-	-
Un peu	-	-	1	9	1	10
Pas du tout	13	100	10	91	10	90
Total	13	100	11	100	11	100

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES
CETTE ANNEE DANS VOTRE COURS."

[illegible]

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INSCRIVEZ DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS
CONSACRE A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES.

CETTE ANNEE DANS VOTRE COURS."

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Cours magistral (suivi ou non d'une discussion)	2	14	2	14	1	7	-	-	1	7	4	29	3	22	1	7	14
"Maïeutique" (méthode suscitant la réflexion au moyen de questions appropriées)	1	8	7	50	2	14	2	14	2	14	-	-	-	-	-	-	14
Travaux pratiques - ordinateurs, travaux de laboratoire, expériences	9	64	4	29	1	7	-	-	-	-	-	-	-	-	-	-	14
Travail en petits groupes (sous la surveillance du professeur)	7	50	5	36	1	7	1	7	-	-	-	-	-	-	-	-	14
Séminaire (travail d'un seul groupe dirigé ou non par un professeur; cette technique peut comprendre des exposés d'étudiants)	12	86	2	14	-	-	-	-	-	-	-	-	-	-	-	-	14
Travail individuel (les étudiants font en classe le travail requis pour le cours et rejoignent, au besoin, une aide supplémentaire du professeur; travail à la bibliothèque ou centre de ressources inclus)	3	21	2	15	3	21	-	-	3	21	2	15	1	7	-	-	14
Enseignement individualisé (chaque étudiant travaille à son propre rythme; par ex., enseignement programmé, modules d'apprentissage)	12	86	2	14	-	-	-	-	-	-	-	-	-	-	-	-	14
Tests	14	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Techniques audio-visuelles (télévision, magnétophone, cinéma, radio, etc.)	11	79	3	21	-	-	-	-	-	-	-	-	-	-	-	-	14
Autres techniques	11	79	3	21	-	-	-	-	-	-	-	-	-	-	-	-	14

TABLE 18.35

SECONDARY SCHOOL. MATHEMATICS YEAR 5 CALCUL

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

TRANSCRIPTION DANS LA CASE DE DROITE LE POURCENTAGE APPROXIMATIF DU TEMPS

CONSCRIVEZ A CHACUNE DES TECHNIQUES QUE VOUS AVEZ UTILISEES

CETTE ANNEE DANS VOTRE COURS."

[illegible]

[illegible]

TABLE 18.37

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DANS CE COURS, VOS ETUDIANTS UTILISENT-ILS
LE MATERIEL MENTIONNE CI-DESSOUS?"

	BEAUCOUP			MODERE-			PAS DU			TOTAL		
	N	%		N	%		N	%		N	%	
Manuel principal	6	46	3	23	3	23	1	8	-	-	-	13
Manuel principal et manuel(s) supplément- aire(s)	2	15	3	23	3	23	5	39	-	-	-	13
Deux manuels principaux ou plus de deux, ou des extraits d'autres manuels	2	15	1	8	1	8	9	69	-	-	-	13
Documents polycopiés (notes de cours et autres documents)	5	38	2	16	5	38	1	8	-	-	-	13
Sources secondaire (livres de référence, dictionnaires, encyclopédies, etc.)	-	-	-	-	5	38	7	54	1	8	13	13
Enseignement par modules	-	-	1	8	2	15	8	62	2	15	13	13
Matériel de laboratoire et/ou ordinateurs	-	-	1	8	4	31	6	46	2	15	13	13
Média audio-visuel (télévision, magnétophone, cinéma, etc.)	-	-	-	-	3	23	8	62	2	15	13	13

TABLE 18.38

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"DANS CE COURS, VOS ETUDIANTS UTILISENT-ILS

LE MATERIEL MENTIONNE CI-DESSOUS?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Manuel principal	12	86	2	14	-	-	-	-	-	-	14
Manuel principal et manuel(s) supplément- aire(s)	-	-	2	14	4	29	7	50	1	7	14
Deux manuels principaux ou plus de deux, ou des extraits d'autres manuels	-	-	-	-	2	14	11	79	1	7	14
Documents photocopiés (notes de cours et autres documents)	2	14	5	36	7	50	-	-	-	-	14
Sources secondaire (livres de référence, dictionnaires, encyclopédies, etc.)	-	-	1	7	3	21	10	72	-	-	14
Enseignement par modules	1	7	-	-	1	7	12	86	-	-	14
Matériel de laboratoire et/ou ordinateurs	-	-	-	-	1	7	13	93	-	-	14
Média audio-visuel (télévision, magnétophone, cinéma, etc.)	-	-	1	7	4	29	9	64	-	-	14
Autre matériel	-	-	2	15	1	8	10	77	-	-	13

TABLE 18.39

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS & FUNCTIONS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "DANS CE COURS, VOS ETUDIANTS UTILISENT-ILS
 LE MATERIEL MENTIONNE CI-DESSOUS?"

	BEAUCOUP		MODERE-		UN PEU		PAS DU		ITEM NON		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Manuel principal	13	100	-	-	-	-	-	-	-	-	13
Manuel principal et manuel(s) supplé- mentaire(s)	-	-	1	8	2	15	8	62	2	15	13
Deux manuels principaux ou plus de deux, ou des extraits d'autres manuels	-	-	1	8	1	8	9	69	2	15	13
Documents photocopiés (notes de cours et autres documents)	1	8	5	38	4	31	3	23	-	-	13
Sources secondaire (livres de référence, dictionnaires, encyclopédies, etc.)	-	-	-	-	7	54	6	46	-	-	13
Enseignement par modules	-	-	-	-	1	8	8	61	4	31	13
Matériel de laboratoire et/ou ordinateurs	-	-	-	-	2	15	8	62	3	23	13
Média audio-visuel (télévision, magnétophone, cinéma, etc.)	-	-	1	8	1	8	11	84	-	-	13
Autre matériel	-	-	-	-	-	-	8	67	4	33	12

TABLE 18.40
SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCULUS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DANS CE COURS, VOS ETUDIANTS UTILISENT-ILS
LE MATERIEL MENTIONNE CI-DESSOUS?"

	BEAUCOUP		MODERE- MENT		UN PEU		PAS DU TOUT		ITEM NON PERTINENT		TOTAL
	N	%	N	%	N	%	N	%	N	%	
Manuel principal	10	90	1	10	-	-	-	-	-	-	11
Manuel principal et manuel(s) supplément- aire(s)	1	9	-	-	3	27	4	37	3	27	11
Deux manuels principaux ou plus de deux, ou des extraits d'autres manuels	-	-	-	-	3	28	4	36	4	36	11
Documents photocopiés (notes de cours et autres documents)	-	-	4	36	5	46	2	18	-	-	11
Sources secondaire (livres de référence, dictionnaires, encyclopédies, etc.)	-	-	2	18	2	18	6	55	1	9	11
Enseignement par modules	-	-	-	-	1	9	9	82	1	9	11
Matériel de laboratoire et/ou ordinateurs	-	-	-	-	1	9	9	82	1	9	11
Média audio-visuel (télévision, magnétophone, cinéma, etc.)	-	-	-	-	1	9	9	82	1	9	11

TABLE 18.41

SECONDARY SCHOOL MATHEMATIQUES YEAR 5 ALGEBRA
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "DANS CE COURS, VOS ETUDIANTS UTILISENT-ILS
 LE MATERIEL MENTIONNE CI-DESSOUS?"

	BEAUCOUP			MODERE-			UN PEU			PAS DU			ITEM NON			TOTAL
	N	%		N	%	MENT	N	%		N	%	TOUT	N	%	PERTINENT	
Manuel principal	9	82		2	18		-	-	-	-	-	-	-	-	-	11
Manuel principal et manuel(s) supplément- aire(s)	-	-		3	27		3	27	5	46			-	-	-	11
Deux manuels principaux ou plus de deux, ou des extraits d'autres manuels	-	-		1	9		2	18	7	64			1	9		11
Documents photocopiés (notes de cours et autres documents)	1	9		4	37		3	27	3	27			-	-	-	11
Sources secondaire (livres de référence, dictionnaires, encyclopédies, etc.)	1	9		2	18		-	-	8	73			-	-	-	11
Enseignement par modules	-	-		-	-		-	-	11	100			-	-	-	11
Matériel de laboratoire et/ou ordinateurs	-	-		-	-		1	9	10	91			-	-	-	11
Média audio-visuel (télévision, magnétophone, cinéma, etc.)	-	-		1	9		2	18	8	73			-	-	-	11

TABLE 18.42

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"A COMBIEN ESTIMEZ-VOUS LE NOMBRE DES HEURES QUE VOS ETUDIANTS
CONSACRENT A VOTRE COURS EN DEHORS DES HEURES DE CLASSE?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
0%*	2	15	-	-
1-25%	4	31	-	-
26-50%	6	46	5	36
51-75%	-	-	1	7
76-100%	1	8	7	50
101-150%	-	-	1	7
151-200%	-	-	-	-
201+%	-	-	-	-
Total	13	100	14	100

*La base pour ce pourcentage était les heures accordées au travail en classe. Par exemple, pour deux heures de travail hors de la classe, en rapport avec une heure en classe, le chiffre sera 200.

TABLE 18.43

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"LES ETUDIANTS PEUVENT-ILS ETRE DISPENSES DE L'EXAMEN FINAL
SELON LES RESULTATS OBTENUS EN COURS D'ANNEE?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
Oui	5	38	6	43
Non	3	24	6	43
Le cours ne comporte pas d'examen final	5	38	2	14
Total	13	100	14	100

TABLE 18.44

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DANS QUELLE MESURE UTILISEZ-VOUS LE FRANCAIS COMME LANGUE
D'ENSEIGNEMENT DANS VOTRE COURS?"

	L'AN 4 GENERAL		L'AN 4 AVANCE	
	N	%	N	%
100%	11	92	11	78
90-99%	1	8	3	22
0-89%	-	-	-	-
Total	12	100	14	100

TABLE 18.45

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"A COMBIEN ESTIMEZ-VOUS LE NOMBRE DES HEURES QUE VOS ETUDIANTS
CONSACRENT A VOTRE COURS EN DEHORS DES HEURES DE CLASSE?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGEBRE	
	N	%	N	%	N	%
0%*	-	-	1	8	-	-
1-25%	-	-	-	-	-	-
26-50%	1	8	1	8	2	18
51-75%	-	-	1	8	2	18
76-100%	6	46	6	50	4	37
101-150%	2	15	3	26	1	9
151-200%	3	23	-	-	1	9
201+%	1	8	-	-	1	9
Total	13	100	12	100	11	100

*La base pour ce pourcentage était les heures accordées au travail en classe.
Par exemple, pour deux heures de travail hors de la classe, en rapport
avec une heure en classe, le chiffre sera 200.

TABLE 18.46

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"LES ETUDIANTS PEUVENT-ILS ETRE DISPENSES DE L'EXAMEN FINAL
SELON LES RESULTATS OBTENUS EN COURS D'ANNEE?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGEBRE	
	N	%	N	%	N	%
Oui	5	42	4	36	4	36
Non	3	25	5	46	3	28
Le cours ne comporte pas d'examen final	4	33	2	18	4	36
Total	12	100	11	100	11	100

TABLE 18.47

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"DANS QUELLE MESURE UTILISEZ-VOUS LE FRANCAIS COMME LANGUE
D'ENSEIGNEMENT DANS VOTRE COURS?"

	L'AN 5 REL. & FONCT.		L'AN 5 CALCUL		L'AN 5 ALGEBRE	
	N	%	N	%	N	%
100%	11	85	9	82	7	64
90-99%	2	15	2	18	-	-
0-89%	-	-	-	-	4	36
Total	13	100	11	100	11	100

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	5	38	-	-	3	23	2	16	3	23	-	-	-	-	-	-	13
Examens semestriels	7	54	-	-	3	23	-	-	2	15	-	-	1	8	-	-	13
Autres tests écrits	-	-	-	-	1	8	-	-	4	31	3	23	5	38	-	-	13
Autres tests oraux	13	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Travaux écrits individuels (dissertations, rapports, compte-rendus, etc.)	10	77	3	23	-	-	-	-	-	-	-	-	-	-	-	-	13
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	10	77	3	23	-	-	-	-	-	-	-	-	-	-	-	-	13
Travaux écrits de groupe ou d'équipe, projets	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Problèmes, exercices	3	23	6	46	3	23	-	-	1	8	-	-	-	-	-	-	13
Cahiers	9	69	4	31	-	-	-	-	-	-	-	-	-	-	-	-	13
Participation en classe ou au laboratoire	10	77	3	23	-	-	-	-	-	-	-	-	-	-	-	-	13
Efforts	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Présence	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Autres activités	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 18.49

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	4	29	1	7	4	29	3	21	2	14	-	-	-	-	-	-	14
Examens semestriels	6	43	1	7	3	21	3	21	1	7	-	-	-	-	-	-	14
Autres tests écrits	-	-	1	7	-	-	1	7	1	7	2	14	8	58	1	7	14
Autres tests oraux	12	86	2	14	-	-	-	-	-	-	-	-	-	-	-	-	14
Travaux écrits individuels (dissertations, rapports, compte-rendus, etc.)	13	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	14
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	10	72	3	21	1	7	-	-	-	-	-	-	-	-	-	-	14
Travaux écrits de groupe ou d'équipe, projets	11	79	3	21	-	-	-	-	-	-	-	-	-	-	-	-	14
Problèmes, exercices	8	57	5	36	-	-	-	-	1	7	-	-	-	-	-	-	14
Cahiers	12	86	1	7	1	7	-	-	-	-	-	-	-	-	-	-	14
Participation en classe ou au laboratoire	12	86	2	14	-	-	-	-	-	-	-	-	-	-	-	-	14
Efforts	12	86	2	14	-	-	-	-	-	-	-	-	-	-	-	-	14
Présence	13	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	14
Autres activités	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 18.50
SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS ET FONCTIONS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	4	31	-	-	6	46	1	8	2	15	-	-	-	-	-	-	13
Examens semestriels	5	39	-	-	2	15	4	31	2	15	-	-	-	-	-	-	13
Autres tests écrits	-	-	-	-	-	-	2	15	-	-	3	23	5	39	3	23	13
Autres tests oraux	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Travaux écrits individuels (dissertations, rapports, compte-rendus, etc.)	9	69	3	23	1	8	-	-	-	-	-	-	-	-	-	-	13
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Travaux écrits de groupe ou d'équipe, projets	9	69	3	23	1	8	-	-	-	-	-	-	-	-	-	-	13
Problèmes, exercices	11	85	2	15	-	-	-	-	-	-	-	-	-	-	-	-	13
Cahiers	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Participation en classe ou au laboratoire	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Efforts	12	92	1	8	-	-	-	-	-	-	-	-	-	-	-	-	13
Présence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Autres activités	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 18.51

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	1	9	1	9	5	46	1	9	3	27	-	-	-	-	-	-	11
Examens semestriels	5	46	-	-	3	27	1	9	2	18	-	-	-	-	-	-	11
Autres tests écrits	-	-	-	-	1	9	-	-	2	18	1	9	4	37	3	27	11
Autres tests oraux	11	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
Travaux écrits individuels (dissertations, rapports, compte-rendus, etc.)	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Travaux écrits de groupe ou d'équipe, projets	11	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
Problèmes, exercices	7	64	3	27	1	9	-	-	-	-	-	-	-	-	-	-	11
Cahiers	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Participation en classe ou au laboratoire	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Efforts	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Présence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Autres activités	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

TABLE 18.52

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRE
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "VEUILLEZ INDIQUER EN POURCENTAGE LES ELEMENTS QUI ENTRENT DANS LE CALCUL DE
 LA NOTE FINALE"

	0%		1-10%		11-20%		21-30%		31-40%		41-50%		51-75%		76+%		TOTAL
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
Examens de fin d'année*	5	46	-	-	3	27	1	9	2	18	-	-	-	-	-	-	11
Examens semestriels	4	36	-	-	1	9	4	36	2	18	-	-	-	-	-	-	11
Autres tests écrits	-	-	-	-	2	18	2	18	-	-	1	9	3	27	3	27	11
Autres tests oraux	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Travaux écrits individuels (dissertations, rapports, compte-rendus, etc.)	7	64	3	27	1	9	-	-	-	-	-	-	-	-	-	-	11
Projets individuels (à l'exclusion des dissertations, rapports, etc.)	9	82	1	9	1	9	-	-	-	-	-	-	-	-	-	-	11
Travaux écrits de groupe ou d'équipe, projets	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Problèmes, exercices	6	55	4	36	1	9	-	-	-	-	-	-	-	-	-	-	11
Cahiers	10	91	1	9	-	-	-	-	-	-	-	-	-	-	-	-	11
Participation en classe ou au laboratoire	9	82	2	18	-	-	-	-	-	-	-	-	-	-	-	-	11
Efforts	8	73	3	27	-	-	-	-	-	-	-	-	-	-	-	-	11
Présence	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Autres activités	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Dans le cas où les répondants ont indiqué que les étudiants pouvaient être excusés de l'examen final, on a déterminé le procédé d'arriver à la note finale de façon à exclure la note de l'examen final. Là où tous les étudiants devaient passer l'examen final, cette note a été incluse dans la procédure d'arriver à la note finale.

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP D'ACCENT		ASSEZ D'ACCENT		PEU D'ACCENT		AUCUN ACCENT		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'élève acquerra et/ou développera:											
. l'habileté de comprendre et d'employer une terminologie fondamentale	2	15	4	31	7	54	-	-	-	-	13
. des outils conceptuels et pratiques dont il se servira en mathématiques	11	85	2	15	-	-	-	-	-	-	13
. les habiletés nécessaires pour suivre d'autres cours ou effectuer du travail plus avancé dans le domaine des mathématiques	4	31	6	46	1	8	2	15	-	-	13
. l'habileté de pouvoir appliquer ses connaissances et ses habiletés dans d'autres domaines et d'autres situations	5	38	5	38	3	24	-	-	-	-	13
. les habiletés reliées à une occupation subséquente	3	23	4	31	4	31	2	15	-	-	13
. des habitudes de travail systématiques et valables	5	38	5	38	2	16	1	8	-	-	13
. la capacité de travailler seul	6	46	3	23	4	31	-	-	-	-	13
. l'habileté de s'auto-évaluer	-	-	1	8	5	38	7	54	-	-	13
. l'habileté nécessaire pour faire une approximation d'une réponse	2	15	3	23	7	54	1	8	-	-	13
. la connaissance nécessaire pour savoir si une réponse est logique et raisonnable	4	31	4	31	4	31	1	7	-	-	13
. l'habileté de construire, de faire usage et d'interpréter des modèles concrets et des diagrammes mathématiques	1	8	4	31	6	46	2	15	-	-	13
. l'habileté de comprendre un problème rédigé en français et de le traduire en langage mathématique, afin de le résoudre	3	23	7	54	2	15	1	8	-	-	13

TABLE 13.53 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
 SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP D'ACCENT		ASSEZ D'ACCENT		PEU D'ACCENT		AUCUN ACCENT		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
. l'habileté de se servir de notations symboliques	2	16	5	38	3	23	3	23	-	-	13
. l'habileté de lire un manuel mathématique	2	15	3	23	1	8	7	54	-	-	13
. une connaissance pratique et usuelle de la littérature de base et des ressources en mathé- matiques (bibliothèque, manuels, élèves et confrères)	1	8	1	8	4	31	7	53	-	-	13
. l'habileté de développer une preuve	2	15	1	8	4	31	5	38	1	8	13
. l'habileté d'émettre une hypothèse et d'en vérifier l'exactitude	-	-	2	15	3	23	8	62	-	-	13
. l'habileté de travailler intuitivement et de se servir des niveaux appropriés d'intuition et de rigueur	2	16	-	-	6	46	5	38	-	-	13
. l'habileté de comprendre un argument logique et le sens d'une implication	-	-	6	46	5	38	2	16	-	-	13
. l'habileté de se servir d'exemples et de contre- exemples	2	15	3	23	6	46	2	15	-	-	13
. l'habileté de penser logiquement afin de résoudre des problèmes de façon systématique et de prendre des décisions raisonnées	4	31	4	31	5	38	-	-	-	-	13
. l'habileté de résoudre des problèmes a plusieurs étapes	4	31	5	38	3	23	1	8	-	-	13
. l'habileté de formuler des définitions et de s'en servir	1	8	4	31	5	38	3	23	-	-	13

TABLE 18.53 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL

TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -

"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS

SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP			ASSEZ			PEU			AUCUN			NE S'APPLIQUE			TOTAL
	D'ACCENT	N	%	D'ACCENT	N	%	D'ACCENT	N	%	D'ACCENT	N	%	D'ACCENT	N	%	
. l'appréciation et/ou la compréhension des principes sous-jacents à la structure logique des mathématiques	1	8	-	-	6	46	5	38	1	8	13					
. une compréhension approfondie d'une section ou d'un thème de mathématiques	1	8	6	46	5	38	1	8			13					
. l'appréciation de la nature et de l'importance d'une preuve mathématique	1	8	3	23	2	15	7	54			13					
. une appréciation de la contribution des mathématiques à l'évolution de la civilisation	-	-	2	15	6	46	6	39			13					
. une appréciation du pouvoir des mathématiques de résoudre des problèmes complexes	2	15	2	15	5	39	4	31			13					
. une compréhension et une appréciation de l'unité qui existe entre les diverses branches des mathématiques, grâce à leur relation	2	15	1	7	5	38	5	38			13					
. l'appréciation du raffinement en mathématique, ex. une preuve	-	-	2	15	5	39	6	46			13					
. l'esprit de jugement et de discernement quant au choix de procédés et à leur pertinence dans la solution de problèmes spécifiques	3	23	4	31	5	38	-	-			13					
. l'acquisition d'attitudes positives vis-à-vis les mathématiques	4	31	7	54	2	15	-	-			13					
. l'appréciation des mathématiques comme activité humaine qui vise à accroître les connaissances de l'homme afin qu'il comprenne mieux et qu'il fasse un meilleur usage de son environnement	2	15	3	23	5	39	3	23			13					

TABLE 18.54

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP D'ACCENT		ASSEZ D'ACCENT		PEU D'ACCENT		AUCUN ACCENT		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'élève acquerra et/ou développera:											
• l'habileté de comprendre et d'employer une terminologie fondamentale	7	50	6	43	1	7	-	-	-	-	14
• des outils conceptuels et pratiques dont il se servira en mathématiques	7	50	6	43	1	7	-	-	-	-	14
• les habiletés nécessaires pour suivre d'autres cours ou effectuer du travail plus avancé dans le domaine des mathématiques	7	50	4	29	3	21	-	-	-	-	14
• l'habileté de pouvoir appliquer ses connaissances et ses habilités dans d'autres domaines et d'autres situations	1	7	7	50	5	36	1	7	-	-	14
• les habiletés reliées à une occupation subséquente	-	-	2	14	4	29	6	43	2	14	14
• des habitudes de travail systématiques et valables	9	64	5	36	-	-	-	-	-	-	14
• la capacité de travailler seul	6	43	5	36	3	21	-	-	-	-	14
• l'habileté de s'auto-évaluer	2	14	2	14	4	29	5	36	1	7	14
• l'habileté nécessaire pour faire une approximation d'une réponse	4	28	5	36	5	36	-	-	-	-	14
• la connaissance nécessaire pour savoir si une réponse est logique et raisonnable	8	57	5	36	1	7	-	-	-	-	14
• l'habileté de construire, de faire usage et d'interpréter des modèles concrets et des diagrammes mathématiques	5	36	6	43	3	21	-	-	-	-	14
• l'habileté de comprendre un problème rédigé en français et de le traduire en langage mathématique, afin de le résoudre	6	43	6	43	1	7	1	7	-	-	14

TABLE 18.54 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP D'ACCENT		ASSEZ D'ACCENT		PEU D'ACCENT		AUCUN ACCENT		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
. l'habileté de se servir de notations symboliques	4	29	8	57	2	14	-	-	-	-	14
. l'habileté de lire un manuel mathématique	1	7	5	35	4	29	4	29	-	-	14
. une connaissance pratique et usuelle de la littérature de base et des ressources en mathé- matiques (bibliothèque, manuels, élèves et confrères)	-	-	3	21	10	72	1	7	-	-	14
. l'habileté de développer une preuve	4	29	6	42	4	29	-	-	-	-	14
. l'habileté d'émettre une hypothèse et d'en vérifier l'exactitude	-	-	3	21	7	50	4	29	-	-	14
. l'habileté de travailler intuitivement et de se servir des niveaux appropriés d'intuition et de rigueur	1	7	6	43	4	29	3	21	-	-	14
. l'habileté de comprendre un argument logique et le sens d'une implication	7	50	5	36	1	7	1	7	-	-	14
. l'habileté de se servir d'exemples et de contre- exemples	4	29	7	50	3	21	-	-	-	-	14
. l'habileté de penser logiquement afin de résoudre des problèmes de façon systématique et de prendre des décisions raisonnées	10	71	3	21	1	8	-	-	-	-	14
. l'habileté de résoudre des problèmes à plusieurs étapes	7	50	6	43	1	7	-	-	-	-	14
. l'habileté de formuler des définitions et de s'en servir	4	29	3	21	6	43	1	7	-	-	14

TABLE 18.54 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP		ASSEZ		PEU		AUCUN		NE S'APPLIQUE		TOTAL
	N	%	N	%	N	%	N	%	N	%	
. l'appréciation et/ou la compréhension des principes sous-jacents à la structure logique des mathématiques	2	14	4	29	3	21	4	29	1	7	14
. une compréhension approfondie d'une section ou d'un thème de mathématiques	3	22	7	50	2	14	2	14	-	-	14
. l'appréciation de la nature et de l'importance d'une preuve mathématique	1	7	8	57	4	29	1	7	-	-	14
. une appréciation de la contribution des mathématiques à l'évolution de la civilisation	-	-	4	28	5	36	5	36	-	-	14
. une appréciation du pouvoir des mathématiques de résoudre des problèmes complexes	2	14	6	43	5	36	1	7	-	-	14
. une compréhension et une appréciation de l'unité qui existe entre les diverses branches des mathématiques, grâce à leur relation	3	21	4	29	5	36	1	7	1	7	14
. l'appréciation du raffinement en mathématique, ex. une preuve	3	21	4	29	7	50	-	-	-	-	14
. l'esprit de jugement et de discernement quant au choix de procédés et à leur pertinence dans la solution de problèmes spécifiques	3	21	8	58	3	21	-	-	-	-	14
. l'acquisition d'attitudes positives vis-à-vis les mathématiques	4	29	10	71	-	-	-	-	-	-	14
. l'appréciation des mathématiques comme activité humaine qui vise à accroître les connaissances de l'homme afin qu'il comprenne mieux et qu'il fasse un meilleur usage de son environnement.	-	-	4	29	9	64	1	7	-	-	14

TABLE 18.55

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS ET FONCTIONS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
 SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP		ASSEZ		PEU		AUCUN		NE S'APPLIQUE		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'élève acquerra et/ou développera:											
. l'habileté de comprendre et d'employer une terminologie fondamentale	7	54	6	46	-	-	-	-	-	-	13
. des outils conceptuels et pratiques dont il se servira en mathématiques	4	30	6	46	1	8	1	8	1	8	13
. les habiletés nécessaires pour suivre d'autres cours ou effectuer du travail plus avancé dans le domaine des mathématiques	6	46	7	54	-	-	-	-	-	-	13
. l'habileté de pouvoir appliquer ses connaissances et ses habilités dans d'autres domaines et d'autres situations	-	-	5	38	8	62	-	-	-	-	13
. les habiletés reliées à une occupation subséquente	-	-	3	23	7	54	3	23	-	-	13
. des habitudes de travail systématiques et valables	11	85	2	15	-	-	-	-	-	-	13
. la capacité de travailler seul	5	39	6	46	2	15	-	-	-	-	13
. l'habileté de s'auto-évaluer	1	3	5	38	4	31	3	23	-	-	13
. l'habileté nécessaire pour faire une approximation d'une réponse	3	23	9	69	1	8	-	-	-	-	13
. la connaissance nécessaire pour savoir si une réponse est logique et raisonnable	7	54	6	46	-	-	-	-	-	-	13
. l'habileté de construire, de faire usage et d'interpréter des modèles concrets et des diagrammes mathématiques	5	38	2	15	4	31	1	8	1	8	13
. l'habileté de comprendre un problème rédigé en français et de le traduire en langage mathématique, afin de le résoudre	6	46	4	31	3	23	-	-	-	-	13 ⁵⁹

TABLE 18.55 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS ET FONCTIONS
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
 SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP		ASSEZ		PEU		AUCUN		NE S'APPLIQUE		TOTAL
	N	%	N	%	N	%	N	%	N	%	
. l'habileté de se servir de notations symboliques	5	38	3	23	4	31	1	8	-	-	13
. l'habileté de lire un manuel mathématique	3	23	1	8	7	54	2	15	-	-	13
. une connaissance pratique et usuelle de la littérature de base et des ressources en mathématiques (bibliothèque, manuels, élèves et confrères)	-	-	3	23	6	46	3	23	1	8	13
. l'habileté de développer une preuve	5	39	6	46	2	15	-	-	-	-	13
. l'habileté d'émettre une hypothèse et d'en vérifier l'exactitude	2	15	4	31	5	39	2	15	-	-	13
. l'habileté de travailler intuitivement et de se servir des niveaux appropriés d'intuition et de rigueur	2	16	5	38	5	38	1	8	-	-	13
. l'habileté de comprendre un argument logique et le sens d'une implication	5	38	5	38	2	16	1	8	-	-	13
. l'habileté de se servir d'exemples et de contre-exemples	1	8	6	46	5	38	1	8	-	-	13
. l'habileté de penser logiquement afin de résoudre des problèmes de façon systématique et de prendre des décisions raisonnées	6	46	7	54	-	-	-	-	-	-	13
. l'habileté de résoudre des problèmes à plusieurs étapes	8	62	5	38	-	-	-	-	-	-	13
. l'habileté de formuler des définitions et de s'en servir	1	8	4	30	6	46	1	8	1	8	13

TABLE 18.55 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS ET FONCTIONS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP D'ACCENT		ASSEZ D'ACCENT		PEU D'ACCENT		AUCUN ACCENT		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
. l'appréciation et/ou la compréhension des principes sous-jacents à la structure logique des mathématiques	3	23	2	15	6	46	1	8	1	8	13
. une compréhension approfondie d'une section ou d'un thème de mathématiques	6	46	3	23	4	31	-	-	-	-	13
. l'appréciation de la nature et de l'importance d'une preuve mathématique	4	31	2	15	7	54	-	-	-	-	13
. une appréciation de la contribution des mathématiques à l'évolution de la civilisation	-	-	4	31	6	46	3	23	-	-	13
. une appréciation du pouvoir des mathématiques de résoudre des problèmes complexes	3	23	3	23	6	46	1	8	-	-	13
. une compréhension et une appréciation de l'unité qui existe entre les diverses branches des mathématiques, grâce à leur relation	2	15	4	31	6	46	1	8	-	-	13
. l'appréciation du raffinement en mathématique, ex. une preuve	4	31	2	15	4	31	3	23	-	-	13
. l'esprit de jugement et de discernement quant au choix de procédés et à leur pertinence dans la solution de problèmes spécifiques	5	38	5	38	1	8	2	16	-	-	13
. l'acquisition d'attitudes positives vis-à-vis les mathématiques	5	38	6	46	1	8	1	8	-	-	13
. l'appréciation des mathématiques comme activité humaine qui vise à accroître les connaissances de l'homme afin qu'il comprenne mieux et qu'il fasse un meilleur usage de son environnement.	-	-	5	38	4	31	4	31	-	-	13

TABLE 18.56

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP		ASSEZ		PEU		AUCUN		NE S'APPLIQUE		TOTAL
	N	%	N	%	N	%	N	%	N	%	
L'élève acquerra et/ou développera:											
. l'habileté de comprendre et d'employer une terminologie fondamentale	3	27	5	46	3	27	-	-	-	-	11
. des outils conceptuels et pratiques dont il se servira en mathématiques	10	91	1	9	-	-	-	-	-	-	11
. les habiletés nécessaires pour suivre d'autres cours ou effectuer du travail plus avancé dans le domaine des mathématiques	10	91	-	-	1	9	-	-	-	-	11
. l'habileté de pouvoir appliquer ses connaissances et ses habiletés dans d'autres domaines et d'autres situations	-	-	10	91	-	-	1	9	-	-	11
. les habiletés reliées à une occupation subséquente	-	-	1	9	5	46	3	27	2	18	11
. des habitudes de travail systématiques et valables	6	55	4	36	1	9	-	-	-	-	11
. la capacité de travailler seul	5	46	4	36	1	9	1	9	-	-	11
. l'habileté de s'auto-évaluer	-	-	3	27	3	27	5	46	-	-	11
. l'habileté nécessaire pour faire une approximation d'une réponse	1	9	4	36	6	55	-	-	-	-	11
. la connaissance nécessaire pour savoir si une réponse est logique et raisonnable	2	18	6	55	3	27	-	-	-	-	11
. l'habileté de construire, de faire usage et d'interpréter des modèles concrets et des diagrammes mathématiques	3	27	7	64	1	9	-	-	-	-	11
. l'habileté de comprendre un problème rédigé en français et de le traduire en langage mathématique, afin de le résoudre	4	36	6	55	-	-	-	-	1	9	11

TABLE 18.56 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP			ASSEZ			PEU			AUCUN			NE S'APPLIQUE PAS			TOTAL
	N	%		N	%		N	%		N	%		N	%		
. l'habileté de se servir de notations symboliques	2	18		7	64		2	18		-	-		-	-		11
. l'habileté de lire un manuel mathématique	2	19		4	36		4	36		1	9		-	-		11
. une connaissance pratique et usuelle de la littérature de base et des ressources en mathématiques (bibliothèque, manuels, élèves et confrères)	1	9		4	36		4	36		2	19		-	-		11
. l'habileté de développer une preuve	4	36		2	18		5	46		-	-		-	-		11
. l'habileté d'émettre une hypothèse et d'en vérifier l'exactitude	-	-		3	27		5	46		2	18		1	9		11
. l'habileté de travailler intuitivement et de se servir des niveaux appropriés d'intuition et de rigueur	2	19		3	27		3	27		3	27		-	-		11
. l'habileté de comprendre un argument logique et le sens d'une implication	2	18		6	55		2	18		-	-		1	9		11
. l'habileté de se servir d'exemples et de contre-exemples	1	9		6	55		3	27		-	-		1	9		11
. l'habileté de penser logiquement afin de résoudre des problèmes de façon systématique et de prendre des décisions raisonnées	6	55		4	36		1	9		-	-		-	-		11
. l'habileté de résoudre des problèmes à plusieurs étapes	8	73		3	27		-	-		-	-		-	-		11
. l'habileté de formuler des définitions et de s'en servir	1	9		5	46		4	36		1	9		-	-		11

TABLE 18.56 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
 SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP D'ACCENT		ASSEZ D'ACCENT		PEU D'ACCENT		AUCUN ACCENT		NE S'APPLIQUE PAS		TOTAL
	N	%	N	%	N	%	N	%	N	%	
. l'appréciation et/ou la compréhension des principes sous-jacents à la structure logique des mathématiques	2	18	3	28	2	18	2	18	2	18	11
. une compréhension approfondie d'une section ou d'un thème de mathématiques	6	55	3	27	1	9	1	9	-	-	11
. l'appréciation de la nature et de l'importance d'une preuve mathématique	4	36	4	36	3	28	-	-	-	-	11
. une appréciation de la contribution des mathématiques à l'évolution de la civilisation	1	9	2	18	4	37	3	27	1	9	11
. une appréciation du pouvoir des mathématiques de résoudre des problèmes complexes	4	36	4	36	2	19	1	9	-	-	11
. une compréhension et une appréciation de l'unité qui existe entre les diverses branches des mathématiques, grâce à leur relation	3	28	4	36	4	36	-	-	-	-	11
. l'appréciation du raffinement en mathématique, ex. une preuve	3	27	3	27	4	37	1	9	-	-	11
. l'esprit de jugement et de discernement quant au choix de procédés et à leur pertinence dans la solution de problèmes spécifiques	5	45	5	45	1	9	-	-	-	-	11
. l'acquisition d'attitudes positives vis-à-vis les mathématiques	5	45	4	37	2	18	-	-	-	-	11
. l'appréciation des mathématiques comme <u>activité</u> humaine qui vise à accroître les connaissances de l'homme afin qu'il comprenne mieux et qu'il fasse un meilleur usage de son environnement.	1	9	3	27	2	18	4	37	1	9	11

TABLE 18.57

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGERIE
 TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
 "INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
 SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP			ASSEZ			PEU			AUCUN			NE S'APPLIQUE			TOTAL
	N	%		N	%		N	%		N	%		N	%		
L'élève acquerra et/ou développera:																
. l'habileté de comprendre et d'employer une terminologie fondamentale	7	64		2	18		2	18		-	-		-	-		11
. des outils conceptuels et pratiques dont il se servira en mathématiques	9	82		2	18		-	-		-	-		-	-		11
. les habiletés nécessaires pour suivre d'autres cours ou effectuer du travail plus avancé dans le domaine des mathématiques	8	73		3	27		-	-		-	-		-	-		11
. l'habileté de pouvoir appliquer ses connaissances et ses habiletés dans d'autres domaines et d'autres situations	2	19		3	27		3	27		3	27		-	-		11
. les habiletés reliées à une occupation subséquente	-	-		3	27		1	9		5	46		2	18		11
. des habitudes de travail systématiques et valables	5	46		3	27		3	27		-	-		-	-		11
. la capacité de travailler seul	5	46		3	27		1	9		2	18		-	-		11
. l'habileté de s'auto-évaluer	-	-		1	9		4	36		5	46		1	9		11
. l'habileté nécessaire pour faire une approximation d'une réponse	1	9		3	27		5	46		1	9		1	9		11
. la connaissance nécessaire pour savoir si une réponse est logique et raisonnable	3	27		4	37		2	18		-	-		2	18		11
. l'habileté de construire, de faire usage et d'interpréter des modèles concrets et des diagrammes mathématiques	5	46		2	18		1	9		2	18		1	9		11
. l'habileté de comprendre un problème rédigé en français et de le traduire en langage mathématique, afin de le résoudre	5	46		4	36		1	9		-	-		1	9		11

TABLE 13.57 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGERIE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP D'ACCENT			ASSEZ D'ACCENT			PEU D'ACCENT			AUCUN ACCENT			NE S'APPLIQUE PAS			TOTAL
	N	%		N	%		N	%		N	%		N	%		
. l'habileté de se servir de notations symboliques	7	64		3	27		1	9		-	-		-	-		11
. l'habileté de lire un manuel mathématique	1	9		4	36		2	19		4	36		-	-		11
. une connaissance pratique et usuelle de la littérature de base et des ressources en mathématiques (bibliothèque, manuels, élèves et confrères)	1	9		4	36		1	9		5	46		-	-		11
. l'habileté de développer une preuve	5	46		3	27		3	27		-	-		-	-		11
. l'habileté d'émettre une hypothèse et d'en vérifier l'exactitude	2	18		4	37		2	18		2	18		1	9		11
. l'habileté de travailler intuitivement et de se servir des niveaux appropriés d'intuition et de rigueur	4	36		5	46		2	18		-	-		-	-		11
. l'habileté de comprendre un argument logique et le sens d'une implication	6	55		2	18		2	18		-	-		1	9		11
. l'habileté de se servir d'exemples et de contre-exemples	2	18		4	37		2	18		3	27		-	-		11
. l'habileté de penser logiquement afin de résoudre des problèmes de façon systématique et de prendre des décisions raisonnées	6	55		4	46		1	9		-	-		-	-		11
. l'habileté de résoudre des problèmes à plusieurs étapes	6	55		3	27		2	18		-	-		-	-		11
. l'habileté de formuler des définitions et de s'en servir	2	18		2	18		5	46		2	18		-	-		11

TABLE 18.57 (Cont'd)

SECONDARY SCHOOL MATHEMATIQUES YEAR 5 ALGEBRE
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
"INDIQUEZ L'IMPORTANCE QUE VOUS ATTRIBUEZ AUX BUTS
SUIVANTS DANS L'ENSEIGNEMENT DE CE COURS"

BUTS	BEAUCOUP			ASSEZ			PEU			AUCUN			NE S'APPLIQUE PAS			TOTAL
	N	%	D'ACCENT	N	%	D'ACCENT	N	%	D'ACCENT	N	%	ACCENT	N	%	PAS	
. l'appréciation et/ou la compréhension des principes sous-jacents à la structure logique des mathématiques	3	27		3	27		4	37		-	-		1	9		11
. une compréhension approfondie d'une section ou d'un thème de mathématiques	4	36		5	46		1	9		1	9		-	-		11
. l'appréciation de la nature et de l'importance d'une preuve mathématique	3	27		5	46		2	18		1	9		-	-		11
. une appréciation de la contribution des mathématiques à l'évolution de la civilisation	-	-		1	9		5	46		3	27		2	18		11
. une appréciation du pouvoir des mathématiques de résoudre des problèmes complexes	4	37		2	18		3	27		1	9		1	9		11
. une compréhension et une appréciation de l'unité qui existe entre les diverses branches des mathématiques, grâce à leur relation	-	-		7	64		2	18		2	18		-	-		11
. l'appréciation du raffinement en mathématique, ex. une preuve	3	27		4	36		2	18		1	9		1	9		11
. l'esprit de jugement et de discernement quant au choix de procédés et à leur pertinence dans la solution de problèmes spécifiques	5	46		3	27		2	18		1	9		-	-		11
. l'acquisition d'attitudes positives vis-à-vis les mathématiques	4	36		5	46		2	18		-	-		-	-		11
. l'appréciation des mathématiques comme activité humaine qui vise à accroître les connaissances de l'homme afin qu'il comprenne mieux et qu'il fasse un meilleur usage de son environnement.	1	9		2	18		5	46		2	18		1	9		11

TABLE 18.58
SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISE PAR THEMES

	L'AN 4 GENERAL \bar{x}	L'AN 4 AVANCE \bar{x}
Arithmétique fondamentale	11.8	3.1
Arithmétique du consommateur	11.7	.5
Algèbre fondamentale	20.8	15.2
Fonctions et équations quadratiques	7.4	25.4
Fonctions exponentielles et logarithmiques	14.6	21.1
Suites et séries	10.2	6.0
Géométrie analytique et vecteurs	1.7	4.1
Géométrie synthétique	.3	5.0
Trigonométrie, nombres complexes, et statique	14.4	19.6
Calcul	.0	.0
Statistique et probabilité	6.3	.0

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISÉ PAR THEMES

	L'AN 5 RELATIONS ET FONCTIONS \bar{X}
<u>Relations et Fonctions</u>	
.Fonction représentée graphiquement comme une correspondance	5.5
.Inverse d'une fonction	3.3
.A l'aide d'habiletés déjà acquises, graphiques et propriétés d'une relation	5.0
.A l'aide de la définition 'foyer-directrice', équations et graphiques de coniques	9.4
.Equations de coniques en position non canonique	8.3
.Applications	5.7
.Intersection d'une droite et d'une conique, e.g. une tangente	4.1
.Intersection d'une conique et d'une autre conique	4.1
.Domaine, ensemble d'arrivée et graphiques des fonctions trigonométriques fondamentales	5.9
.Formules trigonométriques ordinaires et leurs applications	8.3
.Problèmes d'identité trigonométrique et équations	6.6
.Déphasage, période et amplitude	4.7
.Translation du plan	7.2
.Rotation du plan	6.4
.La réflexion comme bijection	3.0
.Equation générale de la conique	5.3
<u>Fondement, Algebre Generale</u>	
<u>Combinaisons</u>	
.Ensembles et sous-ensembles	.3
.Partition, combinaisons et permutations	.2
.Fonction génératrice	.1
.Théorème: binôme, multinôme	.1
.Sommutation et différences finies	.1
.Equations de différence	.1

TABLE 18.59 (Cont'd)

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISE PAR THEMES

	L'AN 5 RELATIONS ET FONCTIONS \bar{x}
<u>Algebre Lineaire</u>	
.Discussion de l'espace en deux et en trois dimensions	.2
<u>Formes bi-linéaires et quadratiques</u>	
.Diagonalisation	.9
.Signature	.5
.Produit intérieur d'espace: propriétés de base	.7
.Produit extérieur	.2
.Operateur symétrique	.4
<u>Probabilité et Statistiques</u>	
.Cueillette de données et leur représentation	.9
.Eléments groupés, histogrammes, polygones de fréquence	.5
.Mesures de tendance centrale	.4
.Mesures de dispersion	.4
.Analyse de données: ajustements et résidus	.2
.Etendues-échantillons et événements	.4
.Probabilité d'un événement	.3
.Evénements complémentaires et mutuellement exclusifs	.3
.Probabilité conditionnelle et indépendante	.3
.Erreurs de Type I et de Type II	.1
.Enquête par sondage	.1

TABLE 18.60

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISE PAR THEMES

	L'AN $\frac{5}{X}$ CALCUL
<u>Relations et Fonctions</u>	
.Inverse d'une fonction	1.3
.Problèmes d'identité trigonométrique et équations	1.3
<u>Calcul</u>	
.Limite d'une fonction: approche intuitive par l'entremise de suites et de séries	5.9
.Taux de changement: pentes, sécantes et tangentes	6.4
.Dérivée d'une puissance, d'un produit et d'un quotient	6.1
.Autres dérivées: fonction de la fonction, fonctions trigonométriques	5.9
.L'application de dérivées aux tangentes d'une courbe	3.2
.Autres applications: vitesse et accélération	6.4
.Deuxième dérivée et son emploi: tracé de courbes	4.2
.Problèmes de maximums et de minimums	5.0
.Problèmes avec la dérivée (taux de changement)	3.7
.Equations différentielles; l'antidérivée appliquée aux courbes et aux déplacements	3.0
.L'aire entre les courbes et les axes	3.5
.L'aire renfermée entre les courbes	2.3
.Volume d'une rotation	1.7
.L'intégration en se servant de méthodes numériques	1.7
.Applications impliquant les nombres complexes et les coordonnées polaires	3.6
.Nombres réels: les axiomes, les bornes supérieures et la densité	.2
.Preuve par induction	.1
.Inégalités	.2
.Notation	.1
.Motivation; introduction historique	.1
.La définition et l'algèbre des limites	.5
.Fonctions: définition, algèbre, composition, inverse	.5

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISE PAR THEMES

	L'AN $\frac{5}{X}$ CALCUL
.Continuité: définition, algèbre de fonctions continues	.6
<u>Dérivée</u>	
.Définition et algèbre de la dérivée	1.7
.Règle de dérivation des fonctions composées	1.3
.Dérivation des fonctions élémentaires	2.8
<u>Applications de la différentiation</u>	
.Vitesse relative	.5
.Optimisation	.5
.Esquisse de graphiques	1.5
.Exemples scientifiques	1.1
.La règle d'Hôpital pour les limites	.2
<u>Intégration</u>	
.Définition de l'intégrale et intégration algébrique	2.2
.Théorème fondamental du calcul	.7
.Théorème de valeur moyenne (T.V.M.)	.1
.Application du T.V.M. aux approximations	.1
<u>Techniques d'intégration</u>	
.Remplacement	1.0
.Remplacement trigonométrique	.4
.Décomposition	1.1
.Décomposition en éléments simples	.9
<u>Applications de l'intégration</u>	
.Aire	2.0
.Volume	.9
.Travail	.5
.Longueur d'un arc	.1
.Intégrales impropres	.5
.Théorème de Taylor	.0
.Fonctions exponentielles et logarithmiques	1.7
.Fonctions hyperboliques	.0
<u>Suites et séries</u>	
.La définition et l'algèbre de la limite	1.6
.Convergence absolue	.1
.Convergence simple	.1

TABLE 18.60 (Cont'd)

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISE PAR THEMES

	L'AN $\frac{5}{X}$ CALCUL
.Série de puissances	.5
<u>Equations différentielles élémentaires</u>	
.Séparation de variables	.1
.Equation linéaire générale de premier degré	.5
.Dérivées partielles	.5
.Gradient	.4
<u>Quelques Thèmes Communs</u>	
<u>Nombres complexes</u>	
.Définition et propriétés de corps	1.1
.Solution d'équations quadratiques	1.2
.Représentation géométrique et polaire	1.1
.Théorème de De Moivre	1.1
<u>Coordonnées polaires</u>	
.Correspondance entre les formes rectangulaire, polaire et vectorielle comme moyen d'identification du point P et conversion de l'une a l'autre	1.1
.Le tracé de graphiques	1.5

SECONDARY SCHOOL MATHEMATICS
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISE PAR THEMES

	L'AN $\frac{5}{X}$ ALGEBRE
<u>Algèbre</u>	
<u>Ensembles, sous-ensembles</u>	
.Definitions et lois de la combinaison	5.6
.Principes de dénombrement fondamental	2.9
.Permutations	5.8
.Cominaisons	5.3
<u>Induction mathématique</u>	
.La méthode: emploi avec les propriétés de la notation sigma	4.2
.Applications et contre-exemples	3.6
.Théorème du binôme	5.3
<u>Vecteurs</u>	
.Définition et propriétés	6.6
.Emploi en géométrie	4.6
.Vecteurs décrits en paires ordonnées ou en triples ordonnées	4.0
.Composantes linéaires de vecteurs	4.2
.Définition, formules et propriétés algébriques d'un produit scalaire	4.0
.Projections, vecteurs unitaires; applications à la physique	4.7
<u>Equations de droites</u>	
.Equations linéaires et vectorielles en deux dimensions	3.6
.Equations paramétriques et vectorielles en trois dimensions	3.5
.Angles dirigés, cosinus et nombres	2.2
<u>Equations de plans</u>	
.Equations paramétriques, linéaires et vectorielles en trois dimensions	4.7
.L'ensemble solution de deux et de trois équations linéaires	3.4
<u>Système d'équations linéaires</u>	
. m équations en n variables	2.3
.Matrice augmentée; forme échelonnée de lignes réduites	3.1
.Solution en forme paramétrique	1.7
.Cohérence et inconsistance	2.1

SECONDARY SCHOOL MATHEMATIQUES
TEACHERS' RESPONSES TO QUESTIONNAIRE ITEM -
POURCENTAGE DU TEMPS DE CLASSE UTILISE PAR THEMES

	L'AN 5 ALGEBRE X
<u>Quelques Thèmes Communs</u>	
<u>Matrices et transformations linéaires</u>	
.Matrices: définitions, équations, propriétés	3.4
.Transformations linéaires: exemples, produit intérieur, etc.	2.4
.Transformations linéaires: a^{-1} , propriétés matrices non-renversibles	2.0
<u>Groupes, anneaux et corps</u>	
.Définition, étude et emploi de groupes typiques, e.g. groupes symétriques	.3
.Systèmes de nombres et ensemble de fonctions comme groupes	.3
.Permutations	.3
.Propriétés du groupe de matrices 2×2	.3
.Propriétés et exemples d'anneaux et de corps	.4
<u>Nombres complexes</u>	
.Définition et propriétés de corps	.3
.Solution d'équations quadratiques	.1
.Représentation géométrique et polaire	.3
.Théorème de De Moivre	.3
<u>Raisonnement logique</u>	
.Langage, proposition, trois connectifs de base	.6
.Connectifs et quantificateurs logiques; emploi dans les preuves et contre-preuves	.6
<u>Mathématiques d'investissement</u>	
.Intérêt composé et annuités	.1
.Valeur actuelle	.2
<u>Probabilité et Statistiques</u>	
.Etendues-échantillons et événements	.1
.Probabilité d'un événement	.7
.Evènements complémentaires et mutuellement exclusifs	.4
.Probabilité conditionnelle et indépendante	.1
.Attente mathématique et variance	.4
.Distribution normale	.1

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION ^b	
		A X ^a	L'ENTREE S	A X	LA SORTIE S	A X	L'ENTREE S	A X	LA SORTIE S		
Arithmétique Fondamentale											
.Opérations fondamentales d'arithmétique avec fractions décimales et entiers	38	2.4	1.1	3.5	.8	3.4	1.1	4.4	.7		46
.Les propriétés de commutativité, d'associativité et de distributivité, appliquées à ces opérations	15	2.0	.0	3.0	.0	2.0	.0	4.0	.0		15
.Pourcentages	23	2.6	.5	3.4	.5	3.3	.8	4.3	.8		15
.Intérêt simple et composé	54	1.0	.6	3.1	.4	1.7	1.1	4.0	.0		23
.La mensuration: emploi de nombres exacts et approximatifs (erreur, précision, exactitude, arrondissement)	15	1.0	.0	3.0	.0	2.7	2.1	4.3	.6		8
.Conversion à une notation scientifique et vice-versa	15	1.0	1.0	2.5	.7	2.0	1.0	3.0	1.0		8
.Notation scientifique: emploi en calcul et en approximation	23	2.0	.0	3.0	.0	2.5	.7	3.5	.7		8
.Système métrique: le Système international d'unités	31	.8	.5	3.0	.0	2.0	1.4	4.5	.6		15
.Présentation de données par illustrations (bandes, lignes, graphiques de nombres dirigés, histogrammes, graphiques circulaires)	8	2.0	.0	3.0	.0	2.0	.0	4.0	.0		0

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de 0-aucune connaissance à 5-connaissance approfondie. Voyez le questionnaire de mathématiques, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 18.62 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNE %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION
		A L'ENTREE X	A L'ENTREE S	A LA SORTIE X	A LA SORTIE S	A L'ENTREE X	A L'ENTREE S	A LA SORTIE X	A LA SORTIE S	
Opérations fondamentales avec les nombres entiers	23	2.5	1.3	3.6	1.5	3.2	2.1	4.0	1.4	15
Nombres réels (rationnels, irrationnels; les décimales, périodiques et non périodiques)	38	1.5	1.4	3.8	.9	2.5	1.7	4.2	.9	38
Arithmétique du Consommateur										
.Propriété domiciliaire	38	.4	.5	2.0	.9	.8	1.0	3.0	1.4	15
.Impôt foncier	23	.3	.6	3.0	.0	2.0	.0	4.3	.6	15
.Devises étrangères	8	1.0	.0	3.0	.0	2.0	.0	3.0	.0	8
.Annuités ordinaires	38	.2	.4	2.8	.4	.4	.9	3.8	.4	8
.Annuités dues et différées	23	.0	.0	2.0	.0	.3	.6	2.7	.6	8
.Actions	8	1.0	.0	2.0	.0	2.0	.0	3.0	.0	8
.Fonds d'amortissement	31	.2	.5	2.8	.5	.8	1.5	3.8	.5	8
.Droits de douane et impôts d'accise	8	1.0	.0	3.0	.0	1.0	.0	4.0	.0	0
.Obligations et débentures	15	.0	.0	3.0	.0	.5	.7	3.0	.0	8
.Impôt sur le revenu	46	.7	.8	3.0	1.0	.8	1.0	3.6	.5	0
.Analyse du seuil de rentabilité	8	.0	.0	3.0	.0	.0	.0	4.0	.0	0
Algèbre Fondamentale										
.Arithmétique généralisée: symboles littéraux, notion d'une variable	38	1.7	1.0	2.8	.4	2.6	.5	3.7	.8	31
.Mise en exercice, simplification et évaluation d'expressions algébriques	38	2.1	1.2	3.2	1.0	3.0	.6	4.0	.9	23
.Equations linéaires et problèmes de mots à une variable	23	1.7	.6	3.8	.4	2.8	1.5	4.0	.8	8

TABLE 18.62 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

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THEME	PROFESSEUR QUI ENSEIGNE %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S			
.Système d'équations linéaires à deux variables; son application	31	2.0	.0	3.5 .6	2.5	.6	3.5 .6			15
.Système d'équations linéaires à trois variables	23	.7	1.2	3.0 .0	.7	1.2	3.3 .6			0
.L'emploi de déterminants dans la solution d'équations linéaires	15	.0	.0	4.0 .0	.5	.7	4.5 .7			0
.L'emploi de matrices dans la solution d'équations linéaires	0	.0	.0	.0 .0	.0	.0	.0 .0			0
.Inéquations linéaires et solution graphique de problèmes de programmation linéaire	8	2.0	.0	4.0 .0	2.0	.0	4.0 .0			0
.Mise en facteurs: sortes diverses; fractions complexes	62	1.9	.6	3.0 .8	2.4	.5	3.5 .5			31
.Travail avec des expressions algébriques rationnelles et fractionnaires	46	1.7	.8	2.9 .4	2.1	.9	3.7 .8			31
.Solution d'équations rationnelle simples	38	1.5	.8	2.7 1.1	2.1	1.1	3.6 1.3			23
.Travail avec les radicaux et les nombres irrationnels	62	1.1	.6	2.8 .5	2.1	.6	3.6 .5			46
.Solution d'équations irrationnelles et avec radicaux	38	.2	.4	2.4 .5	1.2	.4	3.2 .4			31
.Quatre opérations fondamentales sur les polynômes	46	1.9	.8	2.9 1.2	2.3	1.0	3.8 .8			38
.Mise en exercice, mise en ordre et évaluation de formules algébriques	8	1.5	.7	3.0 .0	3.0	.0	3.0 .0			8
.Analyse dimensionnelle: emploi avec formules et préfixes (e.g. kilo, micro)	8	3.0	.0	5.0 .0	3.0	.0	5.0 .0			0

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %		
		A X	L'ENTREE S	A LA SORTIE X	A X	L'ENTREE S	A LA SORTIE X			
.Concept de relations: classes, graphiques et inverses	8	1.0	.0	3.0	.0	2.0	.0	4.0	.0	8
.Concept de fonction: notation et évaluation d'expressions écrites en notation fonction- nelle	15	1.5	.7	3.0	.0	2.0	.0	3.5	.7	8
.Rapport et proportion	15	2.0	.0	3.5	.7	2.5	.7	4.0	.0	8
.Théorème du binôme (r ^{ième} terme; applications)	8	1.0	.0	2.0	.0	2.0	.0	3.0	.0	8
Fonctions et Equations Quadratiques										
.La fonction quadratique et ses propriétés: paraboles, graphiques symétrie et inter- section avec les axes	31	4.0	.0	3.0	.8	.5	.6	3.5	.6	15
.L'inverse d'une équation quadratique	8	.0	.0	2.0	.0	.0	.0	3.0	.0	0
.Problèmes de maximums et de minimums: solutions graphiques et algébriques	15	.0	.0	2.0	.0	.5	.7	3.0	.0	8
.Translation dans le plan	8	.0	.0	2.0	.0	.0	.0	3.0	.0	0
.Equations quadratiques: formules, problèmes; compléter le carré	54	.0	.0	2.6	.8	.7	.8	3.6	.8	31
.Systèmes linéaires quadratiques	31	.3	.5	2.6	.5	1.0	1.2	3.3	.5	15
.Inégalités quadratiques	15	.0	.0	2.5	.7	.5	.7	3.5	.7	15
.Applications: (e.g. racines, non-réelles, équations semblables à $\sqrt{4-3x - x^2}$)	15	.0	.0	2.0	.0	.0	.0	2.0	.0	0
.Théorie d'équations quadratiques: nature des racines, discriminant	30	.0	.0	2.4	1.5	.6	.9	2.8	1.5	15
										619

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPÉTENCE MOYENNE À L'ENTRÉE ET À LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNE %	NIVEAU ACTUEL			NIVEAU PRÉFÉRÉ			MECONTENTEMENT DE LA PRÉPARATION %
		A L'ENTRÉE X	S	A LA SORTIE X	A L'ENTRÉE X	S	A LA SORTIE X	
.Théorie d'équations quadratiques: la somme et le produit des racines, applications	15	.0	.0	2.0	.0	1.0	.0	8
Fonctions Exponentielles et Logarithmiques								
.Exposants: nombres entiers naturels, nombres entiers, nombres rationnels	69	1.8	.8	3.1	.8	2.3	.7	38
.Graphiques de fonctions exponentielles communes	31	.0	.0	2.2	.5	.5	.6	15
.Définition de e^x et a^x ; loi des exposants	38	1.0	1.0	3.2	.8	1.4	.9	15
.Equations exponentielles	31	.0	.0	1.6	1.1	.4	.5	15
.Emploi des tables exponentielles	46	.0	.0	2.3	.8	.2	.4	8
.Logarithmes: définitions et relation avec la fonction exponentielle	46	.0	.0	1.7	1.0	.0	.0	0
.Lois des logarithmes	54	1.0	.0	2.7	1.0	.0	.0	0
.Calcul avec des logarithmes	62	.0	.0	2.9	.8	.1	.4	8
.Logarithmes naturels	15	.0	.0	3.8	.4	.0	.0	0
.Equations logarithmiques	15	.0	.0	3.0	.0	.0	.0	0
.Discussion et graphiques des fonctions logarithmiques, exponentielles et des semi-logarithmes	8	.0	.0	3.0	.0	.0	.0	0
.Applications au commerce et/ou à la technologie (croissance et désintégration)	15	.0	.0	2.0	.0	.0	.0	0
.Opération et emploi de la règle à calcul	8	.0	.0	2.0	.0	1.0	.0	8
.Opération et emploi de calculatrices	31	1.8	1.0	3.2	1.0	2.0	.8	8

TABLE 18.62 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPÉTENCE MOYENNE À L'ENTRÉE ET À LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNE	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION
		A L'ENTREE		A LA SORTIE		A L'ENTREE		A LA SORTIE		
		X	S	X	S	X	S	X	S	
<u>Suites et Séries</u>										
.Suites: définitions, termes généraux, graphiques limites	54	.3	.5	2.6	1.1	.4	.8	3.1	.8	8
.Applications (séries arithmétiques, géométriques et de Fibonacci)	38	.2	.4	2.8	.4	1.2	.4	3.5	.5	8
.Séries: définitions, notation, les premiers nièmes termes	54	.1	.4	2.6	1.3	.2	.7	3.3	.8	0
.Formules: séries arithmétiques, géométriques et convergentes	46	.0	.0	2.7	.5	.1	.4	3.3	.8	8
<u>Géométrie Analytique et Vecteurs</u>										
<u>La droite</u>										
.Obtention de plusieurs formes d'équations: deux points, pente-point et points d'intersection avec les axes	8	1.0	.0	3.0	.0	1.0	.0	3.0	.0	0
.L'identification, la construction et la reproduction graphique de la droite à partir de certaines données	8	2.0	.0	3.0	.0	2.0	.0	4.0	.0	0
<u>Cercle et sphère</u>										
.Equation du cercle et ses propriétés fondamentales (symétrie, cordes, intersection)	15	.5	.7	2.5	.7	1.0	.0	2.5	.7	8
.Tangentes au cercle et à la sphère; applications	15	.0	.0	2.5	.7	.5	.7	3.0	.0	8
<u>Parabole, ellipse et hyperbole</u>										
.Sections coniques dans notre entourage	15	.0	.0	1.5	.7	.5	.7	2.5	.7	8

TABLE 18.62 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 GENERAL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A X	L'ENTREE S	A LA SORTIE X	A X	L'ENTREE S	A LA SORTIE X			
.Techniques de construction: brochure de courbe; vocabulaire fondamental	8	.0	.0	2.0	.0	1.0	.0	3.0	.0	8
.Définitions; équations de forme canonique; propriétés; problèmes	8	.0	.0	2.0	.0	1.0	.0	3.0	.0	8
.Systèmes d'équations linéaires - quadra- tiques	8	.0	.0	3.0	.0	.0	.0	4.0	.0	0
.Problèmes et applications	8	.0	.0	1.0	.0	.0	.0	2.0	.0	0
Géométrie Synthétique										
.Cercle: définition, terminologie fondamentale et formules	15	.5	.7	2.0	.0	1.0	.0	2.0	.0	15
.Cercle: propriétés d'angles, de cordes de sécantes et de tangentes	8	.0	.0	2.0	.0	1.0	.0	2.0	.0	8
Trigonométrie, Nombres Complexes, et Statique										
Trigonométrie										
.Fonctions trigonométriques fondamentales et réciproques: définitions, graphiques, propriétés	62	1.0	.8	2.8	.5	1.5	.8	3.3	.5	31
.Identités fondamentales et développements	38	.4	.9	2.2	.9	.6	.9	3.0	.7	8
.Mesure en radian	38	.2	.4	2.6	.5	.4	.9	3.0	.7	8
.Amplitude, période, déphasage et graphiques	23	.3	.6	2.5	.6	.5	.6	3.5	1.0	8
.Lois du sinus et du cosinus	46	.3	.8	3.1	.7	.7	1.0	3.1	.7	15
.Solution de triangles-rectangles	62	1.1	.8	3.1	.6	1.8	1.0	3.5	.8	31
.Solution de triangles obliques	46	.0	.0	2.7	.5	.0	.0	3.5	.5	8

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNE %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A L'ENTREE X	S	A LA SORTIE X	A L'ENTREE X	S	A LA SORTIE X	
Arithmétique Fondamentale								
.Opérations fondamentales d'arithmétique avec fractions décimales et entiers	14	3.8	1.0	4.3	.5	4.3	1.0	4.8 .5 14
.Les propriétés de commutativité, d'associativité et de distributivité, appliquées à ces opérations	14	2.8	1.7	3.5	1.0	3.8	1.0	4.3 .6 21
.Pourcentages	0	2.3	.6	2.3	.6	3.7	1.5	3.7 1.5 14
.Intérêt simple et composé	36	.3	.5	2.3	.7	2.4	1.3	3.4 1.5 43
.La mensuration: emploi de nombres exacts et approximatifs (erreur, précision, exactitude, arrondissement).	14	2.7	2.1	3.3	1.5	3.3	1.5	3.7 1.5 14
.Conversion à une notation scientifique et vice-versa	43	1.7	1.0	3.1	.7	2.7	.8	3.9 .7 29
.Notation scientifique: emploi en calcul et en approximation	36	1.8	.3	3.0	.9	2.5	.8	3.7 .8 21
.Système métrique: emploi des unités traditionnelles	7	1.7	.6	2.0	1.0	3.0	2.0	3.3 2.1 14
.Système métrique: le Système international d'unités	21	1.4	.5	2.2	.8	2.8	1.5	3.4 1.5 29
.Présentation de données par illustrations (bandes, lignes, graphiques de nombres dirigés, histogrammes, graphiques circulaires)	14	1.3	1.0	1.8	1.5	1.5	1.3	2.3 2.1 7

a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de 0-aucune connaissance à 5-connaissance approfondie. Voyez le questionnaire de mathématiques, quatrième partie.

b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

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THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A \bar{X}	L'ENTREE s	A LA SORTIE \bar{X} s	A \bar{X}	L'ENTREE s	A LA SORTIE \bar{X} s	
.Opérations fondamentales avec les nombres entiers	7	4.0	.8	4.3 1.0	4.5	.6	4.5 1.0	14
.Nombres réels (rationnels, irrationnels; les décimales, périodiques et non périodiques)	43	2.3	1.5	4.0 1.0	3.4	.9	4.4 .5	36
<u>Arithmétique du Consommateur</u>								
.Annuités ordinaires	14	.0	.0	3.0 .0	.0	.0	4.0 .0	0
<u>Algèbre Fondamentale</u>								
.Arithmétique généralisée: symboles littéraux, notion d'une variable	43	2.9	1.1	3.7 .7	3.4	1.0	4.4 .5	21
.Mise en exercice, simplification et évaluation d'expressions algébriques	29	2.9	1.1	3.6 .8	3.4	1.0	4.3 .8	21
.Equations linéaires et problèmes de mots à une variable	21	2.6	1.3	3.4 .9	3.5	1.2	4.4 .5	36
.Système d'équations linéaires à deux variables; son application	57	2.3	.8	3.4 .8	3.2	.9	4.3 .8	50
.Système d'équations linéaires à trois variables	14	.5	1.0	2.3 1.0	2.5	1.0	3.0 1.4	14
.L'emploi de déterminants dans la solution d'équations linéaires	14	.8	.5	2.0 .8	1.5	.6	2.5 1.3	21
.L'emploi de matrices dans la solution d'équations linéaires	7	.5	.6	1.0 .8	1.0	.8	1.8 1.0	14
.Inéquations linéaires et solution graphique de problèmes de programmation linéaire	36	1.7	1.1	2.3 1.5	2.1	1.6	3.1 1.7	29

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR % QUI ENSEIGNENT	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A X	L'ENTREE S	A LA SORTIE X	S	A L'ENTREE X	S	A LA SORTIE X	S	%
Mise en facteurs: sortes diverses; fractions complexes	64	2.5	1.0	3.5	.5	3.2	1.2	4.2	.6	43
Travail avec des expressions algébriques rationnelles et fractionnaires	36	2.9	1.2	3.6	.9	3.5	.8	4.4	.5	29
Solution d'équations rationnelles simples	43	2.3	1.7	3.4	.9	3.3	1.3	4.3	.7	36
Travail avec les radicaux et les nombres irrationnels	50	2.4	1.2	3.3	.9	2.8	1.1	3.8	.8	14
Solution d'équations irrationnelles et avec radicaux	50	1.4	1.7	3.1	.9	2.0	1.6	3.7	.9	43
Quatre opérations fondamentales sur les polynômes	21	3.0	1.3	3.7	1.0	3.8	1.0	4.7	.5	21
Mise en exercice, mise en ordre et évalua- tion de formules algébriques	29	2.3	1.6	3.3	1.8	2.5	1.6	3.3	1.3	7
Analyse dimensionnelle: emploi avec formules et préfixes (e.g. kilo, micro)	0	.7	.6	.7	.6	.7	.6	.7	.6	0
Concept de relation: classes, graphiques et inverses	57	1.8	1.0	3.4	1.0	2.6	1.0	4.0	1.3	50
Concept de fonction: notation et évaluation d'expressions écrites en notation fonction- nelle	86	1.6	1.2	3.5	.8	2.1	1.2	4.0	.9	43
Composition et combinaison de fonctions	43	1.3	1.6	2.7	.8	1.4	1.3	3.3	.8	29
Rapport et proportion	21	2.2	.4	3.0	.7	2.6	.5	3.6	1.1	14
Variation (directe, inverse, commune) et applications	0	2.0	.8	2.0	.8	2.3	1.0	2.3	1.0	7
Théorème du binôme ($r^{\text{ième}}$ terme; applications)	21	.5	.6	2.1	.9	1.0	.8	2.8	1.3	14

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

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THEME	PROFESSEUR QUI ENSEIGNEANT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A X	L'ENTREE S	A LA SORTIE X	A X	L'ENTREE S	A LA SORTIE X	A X	S	%
Fonctions et Equations Quadratiques										
.La fonction quadratique et ses propriétés: paraboles, graphiques symétrie et inter- section avec les axes	93	.7	.9	3.2	.6	1.2	1.0	3.7	.8	43
.L'inverse d'une équation quadratique	79	.5	.7	2.7	.8	.8	.9	3.4	.7	21
.Problèmes de maximums et de minimums: solutions graphiques et algébriques	86	.5	.8	2.8	.9	.7	.9	3.5	.8	29
.Applications: régions, fonction injective, valeur absolue et inverse multiplicatif	36	.7	.8	2.0	1.0	1.1	.9	2.7	1.1	21
.Polynômes de degré supérieur: graphiques, théorème de factorisation et mise en facteurs	79	1.1	1.1	2.8	1.1	1.4	1.2	3.6	.9	21
.Translation dans le plan	36	1.1	.7	2.4	1.3	1.9	1.1	3.1	1.7	29
.Equations quadratiques: formules, problèmes; compléter le carré	86	1.1	.9	3.2	.7	1.3	.9	3.7	.5	21
.Systèmes linéaires quadratiques	64	1.1	1.0	2.9	.8	1.3	1.2	3.2	.7	14
.Inégalités quadratiques	57	.6	.7	2.2	1.2	.8	.9	2.6	1.3	14
.Applications: (e.g. racines, non-réelles, équations semblables à $\sqrt{4-3x} - x = 12$)	79	.4	.7	2.5	1.1	.8	1.0	3.1	1.2	21
.Théorie d'équations quadratiques: nature des racines, discriminant	93	.5	1.0	3.0	.9	.8	1.0	3.8	.8	21
.Théorie d'équations quadratiques: la somme et le produit des racines, applications	71	.6	1.2	2.8	1.1	.8	1.1	3.5	.8	21

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNE %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A L'ENTREE \bar{X}	S	A LA SORTIE \bar{X}	A L'ENTREE \bar{X}	S	A LA SORTIE \bar{X}	S	%	
<u>Fonctions Exponentielles et Logarithmiques</u>										
.Exposants: nombres entiers naturels, nombres entiers, nombres rationnels	86	2.2	1.2	3.8	.6	2.8	1.3	4.4	.5	50
.Graphiques de fonctions exponentielles communes	93	.3	.6	2.8	.8	.7	.6	3.2	.8	36
.Définition de e^x et a^x ; loi des exposants	79	1.8	1.3	3.4	.9	2.2	1.3	3.9	.8	36
.Equations exponentielles	79	.5	.9	2.8	.6	.8	1.0	3.3	.7	21
.Emploi des tables exponentielles	93	.2	.4	2.9	.8	.4	.7	3.6	.9	21
.Logarithmes: définitions et relation avec la fonction exponentielle	93	.1	.3	2.9	.6	.3	.5	3.4	.8	14
.Lois des logarithmes	93	.1	.3	3.2	.6	.4	.5	3.9	.6	29
.Calcul avec des logarithmes	93	.2	.4	3.2	.8	.5	.8	3.8	1.2	29
.Logarithmes naturels	36	.2	.4	2.1	1.2	.3	.5	2.8	1.7	7
.Equations logarithmiques	64	.1	.3	2.4	.9	.6	.7	2.9	1.1	21
.Discussion et graphiques des fonctions logarithmiques, exponentielles et des semi-logarithmes	50	.1	.4	2.0	1.2	.6	1.1	2.6	1.5	14
.Applications au commerce et/ou à la technologie (croissance et désintégration)	43	.1	.3	1.9	1.4	.6	.7	3.0	1.3	21
.Opération et emploi de la règle à calcul	7	.4	.5	.8	1.0	1.0	.0	1.8	.5	21
.Opération et emploi de calculatrices	7	1.3	.6	1.7	1.2	1.7	1.2	2.3	2.3	7
<u>Suites et Séries</u>										
.Suites: définitions, termes généraux, graphiques, limites	64	.1	.3	2.9	.6	.2	.4	3.8	1.0	7

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

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THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A	L'ENTREE	A LA SORTIE	A	L'ENTREE	A LA SORTIE			%
		\bar{X}	s	\bar{X}	\bar{X}	s	\bar{X}	s		
.Applications (séries arithmétiques, géométriques et de Fibonacci)	50	.1	.4	2.1 1.2	.3	.5	3.4	.7		7
.Séries: définitions, notation, les premiers nièmes termes	64	.1	.3	2.8 .7	.2	.4	3.7 1.0			7
.Formules: séries arithmétiques, géométriques et convergentes	64	.1	.3	2.8 .5	.3	.5	3.8 .7			7
.Le raisonnement inductif en mathématiques	7	.3	.6	.7 1.2	.3	.6	2.3 1.2			0
<u>Géométrie Analytique et Vecteurs</u>										
<u>La droite</u>										
.Obtention de plusieurs formes d'équations: deux points, pente-point et points d'intersections avec les axes	29	2.3	.8	3.3 .8	3.0	.6	4.1 .7			36
.L'identification, la construction et la reproduction graphique de la droite à partir de certaines données	29	1.6	.9	3.1 .7	3.0	.6	4.1 .7			43
.L'emploi de données expérimentales pour obtenir la meilleure droite possible; l'interpolation	0	1.5	2.1	1.5 2.1	2.0	2.8	2.0 2.8			7
.Espace cartésien en trois dimensions et applications	7	2.0	.0	3.0 .0	2.0	.0	3.0 .0			7
<u>Cercle et sphère</u>										
.Equation du cercle et ses propriétés fondamentales (symétrie, cordes, intersection)	29	.4	.9	2.8 1.6	1.2	1.1	3.4 2.1			14

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED

TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS

"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S	
.Tangentes au cercle et à la sphère; applications	29	.8	1.0	3.3 .5	1.3	1.0	3.8 1.0	7
<u>Parabole, ellipse et hyperbole</u>								
.Sections coniques dans notre entourage	0	1.0	.0	1.0 .0	1.0	1.0	1.0 .0	0
.Techniques de construction; brochure de courbe; vocabulaire fondamental	0	1.0	.0	1.0 .0	1.0	.0	1.0 .0	0
.Définitions; équations de forme canonique; propriétés; problèmes	0	1.0	.0	1.0 .0	1.0	.0	1.0 .0	0
.Systèmes d'équations linéaires - quadratiques	14	.3	.6	2.0 1.0	.3	.6	2.3 1.2	0
.Problèmes et applications	0	1.0	.0	1.0 .0	1.0	.0	1.0 .0	0
.Emploi de transformations	0	1.0	.0	1.0 .0	1.0	.0	1.0 .0	0
<u>Vecteurs en trois dimensions</u>								
.Coordonnées, triples ordonnées, modèles, vecteurs égaux	0	1.0	.0	1.0 .0	1.0	.0	1.0 .0	0
.Addition, multiplication scalaire, problèmes	0	1.0	.0	1.0 .0	1.0	.0	1.0 .0	0
<u>Géométrie Synthétique</u>								
.Concept du lieu géométrique; applications	14	.7	1.2	1.7 1.5	1.3	1.5	2.3 2.1	14
.Cercle: définition, terminologie fondamentale et formules	50	.8	.8	3.6 .5	2.1	.9	4.1 .7	29
.Cercle: propriétés d'angles, de cordes de sécantes et de tangentes	43	.7	.8	3.2 .8	1.3	.5	3.8 .4	29
.Sphère: définition, formules, propriétés	21	.7	1.2	2.7 1.5	1.0	1.0	3.0 1.0	7

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR % QUI ENSEIGNENT	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION	
		A L'ENTREE $\frac{x}{s}$	A LA SORTIE $\frac{x}{s}$	%	A L'ENTREE $\frac{x}{s}$	A LA SORTIE $\frac{x}{s}$	%		
.Applications de vecteurs: transformations de lieux géométriques, cercles et sphères	7	2.0	.0	3.0	.0	2.0	.0	3.0	.0
.Problèmes célèbres en géométrie: cercles à neuf points, etc.	0	1.0	.0	1.0	.0	1.0	.0	1.0	.0
.Figures semblables en deux et en trois dimensions	7	1.7	1.2	2.0	1.7	2.0	1.0	3.0	1.0
.Applications de figures semblables: théorème du moyen proportionnel, etc.	14	1.3	1.5	2.3	2.1	1.7	1.2	3.0	1.7
.Géométrie des solides: mensuration	7	1.0	.0	4.0	.0	3.0	.0	5.0	.0
.Géométrie euclidienne et autres	21	1.7	.6	3.0	1.0	2.3	.6	3.7	.6
Trigonométrie, Nombres Complexes, et Statique									
Trigonométrie									
.Fonctions trigonométriques fondamentales et réciproques: définitions, graphiques, propriétés	86	1.2	.9	3.2	.4	1.7	.9	3.7	.6
.Identités fondamentales et développements	86	.3	.6	2.8	.9	1.1	1.0	3.3	.8
.Mesure en radian	57	.8	.9	2.8	1.1	1.5	1.0	3.3	1.1
.Amplitude, période, déphasage et graphiques	71	.1	.3	3.0	.4	.6	.7	3.2	.4
.Solutions d'équations	57	.2	.4	2.6	.8	.6	.5	3.3	.7
.L'inverse des fonctions trigonométriques	50	.3	.5	2.6	.9	.4	.5	3.1	.8
.Applications de transformations linéaires	21	.8	1.3	2.6	.5	1.2	1.1	3.2	.4
.Lois du sinus et du cosinus	71	.7	1.2	3.1	.8	1.2	1.1	4.1	.9
.Solution de triangles-rectangles	64	1.3	1.3	3.2	.6	1.8	1.1	4.2	.8

TABLE 18.63 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 4 ADVANCED
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A \bar{X}	L'ENTREE S	A LA SORTIE \bar{X} S	A \bar{X}	L'ENTREE S	A LA SORTIE \bar{X} S			
.Solution de triangles obliques	57	.5	1.0	3.0	.7	.9	1.0	4.1	1.0	29
.Coordonnées polaires	7	1.0	.0	1.0	.0	1.0	.0	1.0	.0	0
Nombres Complexes										
.En forme rectangulaire (x + iy)	43	.1	.4	1.7	.5	.3	.5	2.1	.7	7
.En forme polaire (r,θ) ou r(cos θ + i sinθ)	0	.0	.0	.0	.0	1.0	.0	1.0	.0	0
.En forme exponentielle (r λ $i\theta$)	0	.0	.0	.0	.0	1.0	.0	1.0	.0	0
.Applications: courant alternatif, etc.	0	.0	.0	.0	.0	1.0	.0	1.0	.0	0

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS ET FONCTIONS
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION ^b	
		A L'ENTREE \bar{X}	A LA SORTIE \bar{X}	S	A L'ENTREE \bar{X}	A LA SORTIE \bar{X}	S	%	
Relations et Fonctions									
.Fonction représentée graphiquement comme une correspondance	100	2.1	3.5	.6	2.3	4.2	1.0	.6	31
.Inverse d'une fonction	100	1.5	3.4	.8	2.0	4.2	.7	.6	46
.A l'aide d'habiletés déjà acquises, graphiques et propriétés d'une relation	100	2.3	3.7	.6	2.4	4.2	.7	.7	31
.A l'aide de la définition 'foyer-directrice', équations et graphiques de coniques	100	.2	3.3	.4	.6	3.8	.8	.6	46
.Equations de coniques en position non canonique	100	.2	3.0	.6	.5	3.7	.8	.5	31
.Applications	85	.3	3.0	.5	.7	3.6	.9	.8	23
.Intersection d'une droite et d'une conique, e.g. une tangente	100	1.1	3.5	1.0	1.2	4.0	.9	.9	31
.Intersection d'une conique et d'une autre conique	100	1.2	3.6	1.0	1.3	4.0	.9	.9	31
.Domaine, ensemble d'arrivée et graphiques des fonctions trigonométriques fondamentales	100	1.8	3.4	.6	2.3	4.0	.6	.7	38
.Formules trigonométriques ordinaires et leurs applications	100	1.5	3.5	.7	2.0	4.0	.9	.6	46
.Problèmes d'identité trigonométrique et équations	100	1.7	3.4	.8	2.1	4.0	.8	.7	31

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de 0-aucune connaissance à 5-connaissance approfondie. Voyez le questionnaire de mathématiques, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 18.64 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 RELATIONS ET FONCTIONS
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNE %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A \bar{X}	L'ENTREE s	A LA SORTIE \bar{X}	A \bar{X}	L'ENTREE s	A LA SORTIE \bar{X}	A \bar{X}	L'ENTREE s	DE LA PREPARATION %
.Déphasage, période et amplitude	100	1.2	1.0	3.7	.7	2.3	.6	4.2	.6	62
.Translation du plan	100	1.1	1.3	3.7	.7	1.3	1.4	4.0	.7	23
.Rotation du plan	100	.5	.9	3.2	.6	.8	1.0	3.7	.7	31
.La réflexion comme bijection	92	.6	.9	3.4	.8	.8	1.1	2.3	1.8	15
.Equation générale de la conique	92	.0	.0	3.4	.5	.6	1.0	3.7	.6	31
<u>Fondement, Algèbre Générale</u>										
<u>Combinaisons</u>										
.Ensembles et sous-ensembles	15	1.5	.7	2.5	.7	1.5	.7	3.0	.0	0
<u>Probabilité et Statistiques</u>										
.Cueillette de données et leur représentation	23	1.0	1.7	3.3	1.5	1.3	1.5	3.3	1.5	8
.Eléments groupés, histogrammes, polygones de fréquence	23	1.0	1.7	3.3	1.5	1.3	1.5	3.3	1.5	8
.Mesures de tendance centrale	23	.3	.6	3.0	1.0	.7	.6	3.3	1.5	8
.Mesures de dispersion	23	.0	.0	2.7	.6	.3	.6	3.0	1.0	8

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION ^b %
		A L'ENTREE $\frac{\bar{x}}{s}$	A LA SORTIE $\frac{\bar{x}}{s}$	A L'ENTREE $\frac{\bar{x}}{s}$	A LA SORTIE $\frac{\bar{x}}{s}$	A L'ENTREE $\frac{\bar{x}}{s}$	A LA SORTIE $\frac{\bar{x}}{s}$	
Calcul								
Enseignement Elémentaire								
.Limite d'une fonction: approche intuitive par l'entremise de suites et de séries	75	.2 .4	3.0 .8	.7 .8	3.4 1.0			33
.Taux de changement: pentes, sécantes et tangentes	83	1.1 .9	3.6 .7	1.4 1.2	4.0 .7			25
.Dérivée d'une puissance, d'un produit et d'un quotient	83	.0 .0	4.0 .7	.0 .0	4.1 .6			0
.Autres dérivées: fonction de la fonction, fonctions trigonométriques	67	.0 .0	3.3 .7	.0 .0	3.8 .7			0
.L'application de dérivées aux tangentes d'une courbe	83	.2 .4	3.2 .6	.2 .4	3.8 .4			0
.Autres applications: vitesse et accélération	83	.7 .8	3.4 .5	.8 .8	3.9 .6			8
.Deuxième dérivée et son emploi: tracé de courbes	83	.0 .0	3.2 .9	.1 .3	3.6 .9			8
.Problèmes de maximums et de minimums	83	.6 .7	3.3 .7	.7 .7	3.8 .6			8
.Problèmes avec la dérivée (taux de changement)	75	.0 .0	3.3 .7	.0 .0	3.9 .6			0
.Equations différentielles; l'antidérivée appliquée aux courbes et aux déplacements	67	.0 .0	3.1 .6	.0 .0	3.6 .7			0

^a Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de 0-aucune connaissance à 5-connaissance approfondie. Voyez le questionnaire de mathématiques, quatrième partie.

^b Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 18.65 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEURS			NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT		
	%	QUI ENSEIGNENT	A L'ENTREE	A LA SORTIE	A L'ENTREE	A LA SORTIE	A L'ENTREE	A LA SORTIE	DE LA PREPARATION			
			X	S	X	S	X	S	X	S		%
.L'aire entre les courbes et les axes	83		.0	.0	3.1	.7	.0	.0	3.6	.7		0
.L'aire renfermée entre les courbes	83		.0	.0	3.1	.7	.0	.0	3.6	.7		0
.Volume d'une rotation	50		.0	.0	2.3	1.1	.0	.0	3.0	1.6		0
.L'intégration en se servant de méthodes numériques	42		.0	.0	3.0	.8	.0	.0	4.0	.0		0
.Applications impliquant les nombres complexes et les coordonnées polaires	42		.2	.4	3.0	.7	.2	.4	3.2	.8		0
Enseignement Approfondi												
.Nombres réels: les axiomes, les bornes supérieures et la densité	8		3.0	.0	3.0	.0	1.0	.0	4.0	.0		0
.Preuve par induction	0		1.0	.0	1.0	.0	1.0	.0	1.0	.0		0
.Inégalités	8		1.5	.7	2.0	1.4	2.0	1.4	3.0	2.8		8
.Notation	17		.5	.7	3.0	.0	1.0	1.4	4.0	1.4		8
.Motivation; introduction historique	17		.0	.0	1.0	.0	.0	.0	1.0	.0		0
.La définition et l'algèbre des limites	33		.0	.0	3.0	.0	.0	.0	3.3	.6		0
.Fonctions: définition, algèbre, composition, inverse	25		1.2	.4	2.7	.6	1.7	.6	4.0	1.0		8
.Continuité: définition, algèbre de fonctions continues	33		.2	.5	2.3	.5	.3	.5	3.3	1.0		0
Théorèmes de Fonctions Continues												
.Valeur intermédiaire	0		.0	.0	.0	.0	.0	.0	.0	.0		0

TABLE 18.65 (Cont'd)

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SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S	
.Valeur extrême	0	.0	.0	.0	.0	.0	.0	0
<u>Dérivée</u>								
.Définition et algèbre de la dérivée	58	.0	.0	3.1	.7	.1	.4	3.8
.Règle de dérivation des fonctions composées	50	.0	.0	3.3	.5	.0	.0	4.0
.Dérivation des fonctions élémentaires	58	.0	.0	3.4	.5	.1	.4	4.0
<u>Théorèmes de Différentiation</u>								
.Rolle	0	.0	.0	.0	.0	.0	.0	.0
.Valeur moyenne	0	.0	.0	.0	.0	.0	.0	.0
<u>Applications de la Différentiation</u>								
.Vitesse relative	33	.5	.6	3.0	.0	1.0	1.0	3.3
.Optimisation	25	.7	.6	2.7	.6	.7	.6	3.3
.Esquisse de graphiques	42	.8	.8	3.2	.8	.8	.8	3.7
.Exemples scientifiques	42	.2	.4	3.0	.0	.2	.5	3.2
.La règle d'Hôpital pour les limites	0	.0	.0	.0	.0	.0	.0	.0
<u>Intégration</u>								
.Définition de l'intégrale et intégration algébrique	67	.0	.0	2.9	.8	.0	.0	3.4
.Théorème fondamental du calcul	42	.0	.0	3.0	.7	.0	.0	3.6
.Théorème de valeur moyenne (T.V.M.)	8	.0	.0	2.0	.0	.0	.0	3.0
.Application du T.V.M. aux approximations	8	.0	.0	2.0	.0	.0	.0	3.0

TABLE 18.65 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL				NIVEAU PREFERE				MECONTENTEMENT DE LA PREPARATION	
		A L'ENTREE		A LA SORTIE		A L'ENTREE		A LA SORTIE		DE LA PREPARATION	
		X	S	X	S	X	S	X	S	%	%
<u>Techniques d'intégration</u>											
.Remplacement	33	.0	.0	2.5	.6	.0	.0	3.0	.0	0	0
.Remplacement trigonométrique	17	.0	.0	2.5	.7	.0	.0	3.0	.0	0	0
.Décomposition	42	.0	.0	2.6	.5	.0	.0	3.2	.4	0	0
.Décomposition en éléments simples	33	.0	.0	2.3	.6	.0	.0	3.0	.0	0	0
<u>Applications de l'intégration</u>											
.Aire	58	.0	.0	2.8	.4	.0	.0	3.3	.5	0	0
.Volume	33	.0	.0	3.3	.6	.0	.0	3.3	.6	0	0
.Travail	17	.0	.0	3.0	1.4	.0	.0	4.0	.0	0	0
.Longueur d'un arc	8	.0	.0	2.0	.0	.0	.0	3.0	.0	0	0
.Intégrales impropres	17	.0	.0	2.0	.0	.0	.0	2.0	.0	0	0
.Fonctions exponentielles et logarithmiques	42	.2	.4	2.7	.6	.3	.6	3.3	1.2	0	0
<u>Suites et Séries</u>											
.La définition et l'algèbre de la limite	42	.0	.0	3.0	.7	.0	.0	3.4	1.1	0	0
.Convergence absolue	8	.0	.0	2.0	.0	.0	.0	2.0	.0	0	0
.Convergence simple	8	.0	.0	2.0	.0	.0	.0	2.0	.0	0	0
.Série de puissances	17	1.0	.0	2.5	.7	1.0	.0	3.0	1.4	0	0
<u>Equations Différentielles Élémentaires</u>											
.Séparation de variables	8	1.0	.0	3.0	.0	.0	.0	4.0	.0	0	0
.Equation linéaire générale de premier degré	17	.5	.7	3.5	.7	1.0	1.4	4.5	.7	3	37

TABLE 18.65 (Cont'd)
 SECONDARY SCHOOL MATHEMATICS YEAR 5 CALCUL
 TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
 "NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S	
.Dérivées partielles	17	.0	.0	2.5 .7	.0	.0	3.5 .7	0
.Gradient	8	2.0	.0	3.0 .0	2.0	.0	3.0 .0	0
.Autre	17	.0	.0	3.5 .7	.0	.0	4.0 .0	0
<u>Quelques Thèmes Communs</u>								
<u>Nombres complexes</u>								
.Définition et propriétés de corps	42	.2	.4	2.8 .8	.2	.4	3.2 .8	0
.Solution d'équations quadratiques	42	.4	.5	3.0 .9	.4	.5	3.4 .9	0
.Représentation géométrique et polaire	42	.0	.0	3.2 1.1	.0	.0	3.0 .8	0
.Théorème de De Moivre	42	.0	.0	2.2 .4	.0	.0	2.5 .6	0
<u>Coordonnées polaires</u>								
.Correspondance entre les formes rectangulaire, polaire et vectorielle comme moyen d'identification du point P et conversion de l'une à l'autre	33	.0	.0	2.6 .5	.0	.0	2.8 .5	0
.Le tracé de graphiques	33	.0	.0	2.8 .8	.0	.0	3.5 1.0	0

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRE
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION %		
		A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S	A X	L'ENTREE S	A LA SORTIE X S
Algèbre										
Ensembles, sous-ensembles										
.Définitions et lois de la combinaison	100	.9	.9	3.4	.5	.9	.9	3.9	.7	9
.Principes de dénombrement fondamental	91	.4	.7	3.0	.8	.7	1.0	3.3	1.2	27
.Permutations	100	.0	.0	3.4	.8	.2	.4	4.0	.7	18
.Combinaisons	100	.0	.0	3.4	.8	.2	.4	3.9	.7	9
Induction mathématique										
.La méthode: emploi avec les propriétés de la notation sigma	91	.0	.0	3.4	1.0	.4	.9	3.8	.8	18
.Applications et contre-exemples	91	.0	.0	3.3	.8	.4	.9	3.8	.7	18
.Théorème du binôme	91	.1	.3	3.3	.8	.6	1.1	3.9	.8	18
Vecteurs										
.Définition et propriétés	100	1.4	1.0	3.6	1.4	1.8	1.0	3.9	.7	27
.Emploi en géométrie	100	.7	.9	3.2	1.1	1.4	.8	3.9	.7	45
.Vecteurs décrits en paires ordonnées ou en triples ordonnées	100	1.3	1.2	4.0	.9	1.6	1.1	4.0	.7	36
.Composantes linéaires de vecteurs	100	.2	.6	3.4	.8	.7	.8	4.0	.7	27
.Définition, formules et propriétés algébriques d'un produit scalaire	100	.0	.0	3.8	1.1	.5	1.0	3.7	.7	36

Les chiffres dans cette table sont en rapport avec l'échelle de réponse qui range de 0-aucune connaissance à 5-connaissance approfondie. Voyez le questionnaire de mathématiques, quatrième partie.

Les chiffres dans cette colonne indiquent le pourcentage des professeurs qui préféreraient un moyen de compétence au début du cours qui soit plus haut que ce que les étudiants possèdent.

TABLE 18.66 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRE

TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS

"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A X	L'ENTREE S	A LA SORTIE X	A X	L'ENTREE S	A LA SORTIE X	A X	L'ENTREE S	%
.Projections, vecteurs unitaires; applications à la physique	100	.4	.7	3.1	.8	.5	.7	3.7	.7	18
<u>Equations de droites</u>										
.Equations linéaires et vectorielles en deux dimensions	100	.4	.7	3.3	.9	1.7	3.9	4.1	.9	18
.Equations paramétriques et vectorielles en trois dimensions	100	.0	.0	3.9	.9	.2	.4	4.2	.8	18
.Angles dirigés, cosinus et nombres	100	.0	.0	3.6	1.0	.2	.4	4.0	.9	18
<u>Equations de plans</u>										
.Equations paramétriques, linéaires et vectorielles en trois dimensions	100	.0	.0	3.6	1.0	.2	.4	3.9	.9	18
.L'ensemble solution de deux et de trois équations linéaires	91	.4	.9	3.7	.9	.3	.5	4.3	.7	18
<u>Système d'équations linéaires</u>										
. n équations en n variables	91	.8	.9	3.4	1.1	1.1	1.0	3.7	1.1	18
.Matrice augmentée; forme échelonnée de lignes réduites	91	.0	.0	3.5	.7	.3	.5	4.0	.9	27
.Solution en forme paramétrique	91	.0	.0	3.4	.7	.4	.7	3.9	.9	18
.Cohérence et incohérence	91	.4	.7	3.3	1.0	.4	.5	3.7	1.3	9
<u>Quelques Thèmes Communs</u>										
<u>Matrices et transformations linéaires</u>										
.Matrices: définitions, équations, propriétés	64	.3	.5	3.5	.8	.5	.5	3.8	.9	9

TABLE 18.66 (Cont'd)

SECONDARY SCHOOL MATHEMATICS YEAR 5 ALGEBRA
TEACHERS' RATINGS OF ACTUAL AND PREFERRED LEVELS
"NIVEAU DE COMPETENCE MOYENNE A L'ENTREE ET A LA SORTIE DU COURS"

THEME	PROFESSEUR QUI ENSEIGNENT %	NIVEAU ACTUEL			NIVEAU PREFERE			MECONTENTEMENT DE LA PREPARATION		
		A \bar{X}	L' s	ENTREE s	A \bar{X}	LA s	SORTIE s	A \bar{X}	LA s	%
.Transformations linéaires: exemples, produit intérieur, etc.	55	.1	.4	2.7	1.3	.2	.5	3.6	.7	9
.Transformations linéaires: a^{-1} , propriétés matrices non-renversibles	64	.0	.0	3.0	.8	.1	.3	3.5	.9	9
<u>Groupes, anneaux et corps</u>										
.Définition, étude et emploi de groupes typiques, e.g. groupes symétriques	18	.5	.7	3.0	.0	.0	.0	3.0	.0	0
.Propriétés et exemples d'anneaux et de corps	9	.0	.0	1.5	2.1	.0	.0	3.0	.0	0
<u>Nombres complexes</u>										
.Définition et propriétés de corps	9	1.0	.0	3.0	.0	.5	.7	3.5	.7	0

**B. ENROLMENT AND STUDENT
ACHIEVEMENT DATA TABLES**

PERCENTAGE OF STUDENTS ENROLLED IN SELECTED COURSES
IN YEARS 3 AND 4
BASED ON THE TOTAL STUDENT ENROLMENT IN YEARS 3 AND 4

	1971	1972	1973	1974	1975
English	96.5	95.2	96.8	98	98.5
French	38.8	31.9	28.6	24	23.5
History	77	41	34.1	31.4	27.9
Physics	25.3	24.6	25.3	24.8	25.2
Math	75.7	76.7	83.8	83.9	85.2

TABLE 2
STUDENT ENROLMENTS IN SELECTED YEAR 5 COURSES
AS A PERCENTAGE OF THE TOTAL ENROLMENT IN ALL YEAR 5 COURSES

	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75
English	21.0	20.6	20.1	19.5	19.8	18.4	17.8	17.2
Français	0.3	0.5	0.6	0.6	0.7	0.6	0.6	0.5
French	11.1	11.1	10.4	9.2	7.5	6.1	5.2	4.5
Mathematics	20.1	20.7	20.6	20.0	23.3	22.9	22.5	23.0
Biology	9.6	10.3	10.7	10.9	10.3	10.5	10.6	10.2
Chemistry	10.8	9.4	9.0	9.2	8.7	9.0	8.9	8.8
Physics	6.6	6.4	6.5	6.4	5.9	6.0	6.2	6.2
History	8.9	9.1	9.1	9.0	8.5	8.4	8.2	7.7
Geography	4.7	5.5	6.2	7.1	6.9	7.1	7.0	6.6
Other	6.9	6.4	6.8	8.1	8.4	11.0	13.0	15.3

TABLE 3
FIRST YEAR COLLEGE ENROLMENTS BY PROGRAM AREA: 1970-1975

PROGRAM AREA	1970		1971		1972		1973		1974		1975	
	N	%	N	%	N	%	N	%	N	%	N	%
Arts and Recreation	3,178	17.9	3,692	17.8	4,392	13.9	4,700	15.0	4,746	14.8	4,843	14.8
Business and Administration	5,361	30.2	5,622	27.1	6,133	24.9	6,601	19.5	6,996	22.1	7,340	22.4
Health Services	182	1.0	195	1.4	873	3.5	8,773	26.0	5,912	18.7	5,835	17.8
Secretarial	1,777	10.0	2,525	12.1	3,318	13.5	3,497	10.3	3,362	10.6	3,386	10.3
Social Service	1,354	7.6	1,967	9.5	2,269	9.2	2,476	7.3	2,632	8.3	3,066	8.9
Technical	3,343	18.8	3,863	18.6	4,400	17.9	4,500	13.3	4,434	14.0	4,454	10.9
Technology	2,591	14.6	2,919	14.0	3,118	12.7	3,297	9.7	3,558	11.2	3,587	10.9

TABLE 4
FIRST YEAR COLLEGE PROGRAM ENROLMENTS BASED ON THE LENGTH OF THE PROGRAM

PROGRAM LENGTH	1970		1971		1972		1973		1974		1975	
	N	%	N	%	N	%	N	%	N	%	N	%
1 year programs	718	4.0	1,095	5.2	1,832	7.5	2,314	6.8	2,560	8.1	2,678	8.2
2 year programs	9,811	55.2	12,129	58.1	13,926	56.8	22,174	65.5	19,274	60.9	20,125	61.9
3 year programs	7,257	40.8	7,659	36.7	8,745	35.7	9,356	27.7	9,806	31.0	9,708	29.9
Totals	17,786	100.0	20,883	100.0	24,503	100.0	33,844	100.0	31,640	100.0	32,511	100.0

TABLE 5

UNIVERSITY PROGRAM AREA ENROLMENTS
1962/3 to 1975/6

PROGRAM AREA	62/3	63/4	64/5	65/6	66/7	67/8	68/9	69/70	70/1	71/2	72/3	73/4	74/5	75/6
Education	1,441	1,451	1,608	1,693	2,040	2,631	4,176	6,168	7,184	7,652	7,119	6,221	9,537	11,029
Fine and Applied Arts	155	190	221	284	341	458	712	1,163	1,733	2,531	4,193	4,732	5,101	5,277
Arts and Social Sciences	16,958	19,378	22,642	26,842	31,305	34,858	41,082	48,117	56,234	60,877	59,614	60,051	58,614	
Math and Physical Sciences	5,396	6,169	7,254	8,336	10,522	12,582	14,739	14,660	15,260	14,529	14,066	15,316	16,967	17,277
Engineering and Applied Sciences	4,538	4,861	5,256	5,969	6,877	7,866	8,924	9,524	10,151	9,880	11,726	12,613	13,414	14,433
Health Professions	4,069	4,119	4,190	4,271	4,519	4,666	5,073	5,192	5,531	5,791	6,375	7,117	7,828	8,276
Law	1,002	1,181	1,375	1,627	1,714	1,882	2,101	2,414	2,712	2,914	3,166	3,415	3,549	
Business Administration	1,724	1,861	1,992	2,168	2,591	2,971	3,280	3,261	3,476	3,662	3,758	4,636	5,674	
Total	35,283	39,210	44,538	51,190	59,909	67,914	80,087	90,499	102,287	107,836	110,017	114,101	120,684	127,135

TABLE 6

FIRST YEAR SUBJECT ENROLMENT AS PERCENTAGE OF TOTAL ENROLMENT IN FIRST YEAR COURSES

a) UNIVERSITY A

	1969/70	1970/1	1971/2	1972/3	1973/4	1974/5
Anthropology/Sociology	10.1	10.1	10.4	8.7	8.1	7.2
Economics	4.3	4.6	5.0	4.3	4.8	6.0
English	11.1	6.7	6.9	6.6	8.1	7.8
French	6.4	6.8	6.7	5.7	5.7	5.6
History	3.6	3.2	2.6	2.5	2.3	2.5
Philosophy	4.3	4.1	2.8	2.2	2.3	2.0
Mathematics	10.0	9.4	11.0	10.4	9.5	9.8
Biology	4.9	4.9	3.0	7.5	7.3	7.3
Chemistry	1.7	5.5	6.4	7.2	6.3	6.6
Geography	2.3	1.9	2.2	1.3	1.4	1.5
Geology	0.7	0.7	0.8	0.6	0.8	1.2
Physics	5.4	5.1	5.9	6.5	5.4	5.4
Psychology	9.3	7.2	6.5	6.4	6.4	6.7
Other	25.9	29.8	29.8	30.1	31.6	30.4

b) UNIVERSITY B

	1968/9	1969/70	1970/1	1971/2	1972/3	1973/4	1974/5
Anthropology/							
Sociology	7.2	15.7	17.3	12.4	8.0	6.7	6.3
Economics	4.1	5.1	5.6	6.4	7.0	7.5	8.5
English	13.5	10.5	7.9	7.4	6.7	6.6	6.6
French	8.4	5.4	5.3	5.9	5.9	5.7	5.9
History	4.1	5.1	5.2	3.7	3.7	4.0	3.8
Philosophy	4.6	3.4	3.4	2.6	4.2	3.3	2.5
Mathematics	10.6	9.0	8.4	8.8	9.0	9.0	10.3
Biology	3.8	3.0	3.3	3.9	3.6	3.8	3.6
Chemistry	4.7	4.1	2.7	3.2	3.3	3.1	3.0
Geography	2.1	1.4	1.6	1.8	2.3	1.8	2.1
Geology	3.6	2.6	1.6	2.5	2.2	2.0	1.7
Physics	4.5	4.0	2.4	3.3	3.3	3.5	3.5
Psychology	7.6	9.0	8.0	9.3	9.9	10.8	10.4
Other	21.2	21.7	27.3	28.8	30.9	32.2	31.8

TABLE 6 (Cont'd)
FIRST YEAR SUBJECT ENROLMENT AS PERCENTAGE OF TOTAL ENROLMENT IN FIRST YEAR COURSES
c) UNIVERSITY C

	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76
Anthropology/Sociology	8.0	9.8	12.2	12.16	15.1	16.8	19.0	16.3	15.0	14.3
Biology	1.8	2.2	2.1	2.1	4.4	5.8	5.2	5.7	6.1	6.2
Chemistry	5.1	4.7	4.6	4.9	5.0	5.3	5.1	5.1	6.0	6.0
Economics	4.6	4.7	5.8	4.6	5.4	6.0	5.9	6.3	6.5	6.6
English	8.0	7.0	7.0	5.9	6.1	5.6	4.1	3.6	3.5	3.8
French	3.5	3.9	3.3	2.6	2.5	2.9	2.1	1.6	1.6	1.9
Geography	3.7	3.1	4.6	3.1	3.9	3.6	3.1	3.1	2.5	3.4
Geology	2.9	1.2	0.5	0.5	0.5	1.3	1.1	0.9	0.6	0.7
History	6.4	6.8	7.7	5.1	4.9	4.2	3.6	3.2	2.9	2.9
Math	10.4	10.8	10.8	10.5	11.7	11.4	13.2	13.4	15.5	15.2
Philosophy	5.9	7.0	7.6	6.6	4.1	3.4	2.6	2.4	2.0	1.8
Physics	4.8	4.4	4.4	4.4	4.4	4.3	4.3	4.1	5.0	5.0
Psychology	8.7	7.3	8.5	17.0	12.8	8.9	8.9	9.2	10.3	8.3
Other	26.2	27.1	20.8	20.1	19.3	20.8	21.6	25.1	22.5	23.8

TABLE 6 (Cont'd)

FIRST YEAR SUBJECT ENROLMENT AS PERCENTAGE OF TOTAL ENROLMENT IN FIRST YEAR COURSES

d) UNIVERSITY D

	1970/1	1971/2	1972/3	1973/4	1974/5
Anthropology/Sociology	1.7	1.4	0.8	0.4	0.4
Biology	3.7	3.4	3.0	2.5	2.5
Chemistry	3.3	3.4	2.9	1.8	1.9
Economics	5.1	4.1	3.7	3.4	3.2
English	4.0	3.0	7.3	6.2	7.2
French	2.9	2.1	2.8	2.3	1.5
Geography	2.2	2.1	3.3	3.3	3.5
Geology	1.8	1.8	1.2	0.9	0.8
History	2.1	1.5	0.3	0.9	1.3
Math	7.3	6.8	8.2	6.3	7.8
Philosophy	3.0	2.7	2.0	3.4	2.6
Psychology	7.8	6.1	9.8	9.4	9.5
Physics	3.2	2.8	2.2	1.4	1.3
Other	51.9	58.8	52.5	57.8	56.4

e) UNIVERSITY E

	1965/6	1968/9	1971/2	1974/5	1975/6
Anthropology/Sociology	4.8	6.9	7.4	4.8	4.4
Biology	2.6	2.3	2.7	1.9	1.8
Chemistry	5.0	3.4	6.2	3.6	6.5
Economics	1.5	6.1	6.3	8.1	6.9
English	11.8	3.9	3.7	3.0	2.8
French	4.3	1.5	1.2	1.2	0.8
Geography	1.7	2.9	4.7	2.9	3.0
History	4.4	1.9	2.1	1.6	1.6
Math	25.7	14.9	13.3	14.0	13.5
Philosophy	10.1	4.7	4.4	2.2	2.3
Psychology	9.1	7.6	11.8	6.8	5.8
Physics	8.0	6.1	8.5	5.4	7.9
Other	11.0	37.8	27.7	44.5	42.7

TABLE 7
YEAR 4 STUDENT MARK DISTRIBUTIONS^a IN SELECTED SUBJECTS
1964; 1967; 1970; 1973; 1975; 1976

SUBJECT	MARK DISTRIBUTION				
	0-49	50-59	60-65	66-74	75+
<u>ENGLISH</u>					
1964 ^b	7.4% ^c	38.3%	22.8%	21.7%	9.8%
1967 ^b	6.0	35.2	23.8	22.5	12.5
1970 (General)	5.3	26.2	33.2	25.9	9.4
1973	5.9	23.2	26.6	32.7	11.6
1975	5.9	25.2	24.2	30.9	13.8
1976	9.1	26.3	27.5	25.7	11.4
<u>ENGLISH (Advanced)</u>					
1970	6.2%	19.4%	26.2%	32.0%	16.2%
1973	6.8	22.0	22.4	28.6	24.4
1975	7.2	22.7	27.7	21.4	21.0
1976	8.1	22.1	25.3	24.4	20.1
<u>FRENCH</u>					
1964 ^b	15.7%	39.9%	15.6%	15.0%	13.8%
1967 ^b	11.1	39.5	16.5	18.0	14.9
1970 (Advanced)	6.9	26.7	20.7	22.6	23.0
1973	6.6	19.0	18.4	24.9	31.1
1975	5.4	15.1	16.4	24.9	38.2
1976	4.1	13.3	16.6	23.2	42.8

^a These figures are based on a sample of 56 schools using the Ontario Ministry of Education "Student Mark Reporting System" from 1973 to 1976. The marks for years 1964, 1967, and 1970 came from Ministry of Education records. The sample size in 1964 was 37, in 1967 it was 43, and in 1970 it was 45 (not all 56 schools were in existence in these years).

^b In 1964 and 1967 courses in year 4 were not offered in General & Advanced Levels of difficulty.

^c Indicates the percentage of students in each category.

TABLE 7 (Cont'd)
 YEAR 4 STUDENT MARK DISTRIBUTIONS^a IN SELECTED SUBJECTS
 1964; 1967; 1970; 1973; 1975; 1976

SUBJECT	MARK DISTRIBUTION				
	0-49	50-59	60-65	66-74	75+
<u>PHYSICS</u> ^d					
1964 ^{b,e}	11.3% ^c	31.7%	19.5%	20.8%	16.7%
1967 ^{b,e}	8.2	34.1	21.3	20.4	16.1
1970 (General)	13.2	27.2	23.1	24.2	12.3
1973	11.5	26.4	18.7	27.2	16.2
1975	11.3	26.2	21.6	22.6	18.3
1976	11.3	25.8	22.8	21.2	18.9
<u>PHYSICS (Advanced)</u>					
1970	10.0%	24.5%	18.4%	27.3%	19.8%
1973	9.6	21.9	18.2	23.3	27.0
1975	9.2	20.8	17.2	24.8	28.0
1976	9.7	19.4	20.1	21.5	29.3
<u>MATHEMATICS</u>					
1964 ^b	12.6%	29.5%	19.2%	20.5%	18.2%
1967 ^b	13.4	38.5	16.3	17.7	14.1
1970 (General)	10.1	25.4	21.3	22.6	22.8
1973	10.4	25.7	19.7	23.3	20.9
1975	12.3	22.0	17.3	22.9	25.5
1976	14.4	25.9	19.5	19.8	20.4
<u>MATHEMATICS (Advanced)</u>					
1970	12.2%	24.9%	17.8%	19.8%	25.3%
1973	13.8	21.9	16.8	20.2	27.3
1975	13.1	20.7	15.2	20.9	30.1
1976	13.0	21.8	18.4	17.6	29.3

^a These figures are based on a sample of 56 schools using the Ontario Ministry of Education "Student Mark Reporting System" from 1973 to 1976. The marks for years 1964, 1967, and 1970 came from Ministry of Education records. The sample size in 1964 was 37, in 1967 it was 43, and in 1970 it was 45 (not all 56 schools were in existence in these years).

^b In 1964 and 1967 courses in year 4 were not offered in General & Advanced Levels of difficulty.

^c Indicates the percentage of students in each category.

^d Offered at year 3 level

^e For 1964 and 1967 Physics marks have been combined with Year 4 Chemistry marks because that was the way this information was reported to the Dept. of Education in those years.

TABLE 8

YEAR 5 (GRADE 13) MARK DISTRIBUTIONS IN SELECTED SUBJECTS 1970-1975

SUBJECT	0-49	50-60	61-70	71-80	81-100	MEAN
<u>ENGLISH</u>						
1970	4.6%	23.8%	39.3%	25.4%	6.8%	65.6
1971	5.0	23.3	38.1	26.3	7.2	65.6
1972	4.5	22.4	37.2	27.4	8.5	62.3
1973	5.1	21.8	35.7	27.9	9.4	66.4
1974	4.4	20.9	34.8	29.1	10.7	67.0
1975	4.1	20.8	23.5	29.8	11.7	66.9
<u>FRANCAIS</u>						
1970	2.4%	19.8%	38.1%	30.2%	9.5%	67.8
1971	2.1	18.5	37.9	32.9	8.7	68.0
1972	5.6	18.4	33.4	33.1	9.5	67.2
1973	1.9	18.7	34.6	33.3	11.5	68.6
1974	1.6	17.6	32.8	33.8	14.2	69.5
1975	1.5	18.5	30.7	33.6	15.8	69.2
<u>FRENCH</u>						
1970	6.0%	28.1%	30.8%	22.6%	11.6%	62.3
1971	6.1	26.4	29.5	23.9	14.2	66.4
1972	3.8	21.4	28.9	27.2	18.6	72.9
1973	3.2	18.3	27.3	29.3	21.8	70.2
1974	4.2	14.2	26.1	30.5	24.8	71.5
1975	2.1	14.6	25.0	30.9	27.5	71.9
<u>HISTORY</u>						
1970	5.3%	23.6%	37.3%	24.6%	9.2%	65.8
1971	6.0	22.3	37.0	25.6	9.1	65.8
1972	5.5	22.7	36.1	26.0	9.7	66.1
1973	5.5	22.2	34.2	26.5	11.2	66.3
1974	5.0	21.6	32.7	27.6	13.1	67.2
1975	4.7	20.3	31.6	28.6	14.9	67.4
<u>GEOGRAPHY</u>						
1970	4.6%	24.7%	41.4%	22.9%	6.3%	65.1
1971	6.0	25.2	39.7	23.1	6.0	64.2
1972	5.3	25.2	38.3	24.1	6.1	65.2
1973	5.4	24.3	36.4	24.9	9.0	65.7
1974	5.1	23.2	35.8	26.2	9.8	66.2
1975	4.7	21.8	34.0	27.8	11.7	66.5

*Indicates the percentage of students in each mark category.

TABLE 8 (Cont'd)

YEAR 5 (GRADE 13) MARK DISTRIBUTIONS IN SELECTED SUBJECTS 1970-1975

SUBJECT	0-49	50-60	61-70	71-80	81-100	MEAN
<u>PHYSICS</u>						
1970	10.1%*	28.5%	30.0%	20.2%	11.3%	63.8
1971	10.1	27.1	29.1	21.3	11.7	64.3
1972	9.2	26.3	28.7	22.5	13.4	65.0
1973	8.7	25.4	27.8	22.6	15	65.7
1974	7.6	23.8	28.5	23.3	16.8	66.5
1975	7.1	22.9	27.6	24.2	18.2	66.8
<u>CHEMISTRY</u>						
1970	7.8%	27.6%	30.3%	21.7%	12.6%	65.0
1971	8.9	26.7	29.1	21.5	13.8	65.1
1972	8.4	27.1	28.9	21.7	14.2	65.4
1973	7.9	25.9	28.1	22.7	15.6	66.0
1974	6.1	27.3	24.7	24.0	17.9	67.0
1975	5.3	22.6	27.3	24.9	19.8	67.7
<u>BIOLOGY</u>						
1970	7.0%	27.3%	34.1%	24.1%	9.0%	64.7
1971	7.5	26.2	32.8	22.8	10.7	65.0
1972	7.2	26.0	31.2	23.9	11.7	65.4
1973	7.5	25.1	30.0	23.8	13.2	65.6
1974	6.0	23.3	28.9	25.5	16.3	67.2
1975	6.0	22.8	27.5	25.6	17.6	67.1
<u>MATH</u>						
1970	10.6%	26.0%	25.6%	20.5%	17.4%	65.2
1971	10.5	25.4	24.8	20.8	18.6	65.6
1972	8.5	23.5	24.7	22.0	21.3	67.2
1973	8.0	22.0	23.9	22.4	23.7	68.2
1974	6.6	20.8	21.1	23.0	26.4	69.5
1975	6.2	20.3	23.0	23.2	27.4	69.4

*Indicates the percentage of students in each mark category.

TABLE 9
YEAR 5 (GRADE 13) FAILURE RATES FOR SELECTED SUBJECTS 1960 - 1975

SUBJECT	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
ENGLISH	22.0 %	15.5 %	18.0 %	13.0 %	18.0 %	16.2 %	10.6 %	12.1 %	5.0 %	4.0 %	4.6 %	5.0 %	4.5 %	5.1 %	4.4 %	4.1 %
HISTORY	28.7	20.0	23.0	20.7	18.7	23.1	18.1	15.4	7.0	5.0	5.3	6.0	5.5	5.5	5.0	4.7
MATH	20.0	17.0	20.0	18.2	18.6	20.7	15.7	14.2	10.9	9.9	10.6	10.5	8.5	8.0	6.6	6.2
PHYSICS	19.0	20.0	16.7	19.6	18.0	17.6	14.2	9.1	10.0	9.0	10.1	10.1	9.2	8.7	7.6	7.1
FRENCH	15.6	20.0	22.0	16.4	17.0	18.6	11.9	11.9	4.0	6.0	6.0	6.1	3.8	3.2	4.2	2.1
CHEMISTRY	23.0	17.0	18.0	16.5	18.0	19.0	17.4	14.6	10.0	8.0	7.8	8.9	8.4	7.9	6.1	5.3
BIOLOGY	13.0	15.0	20.0	16.0	18.7	19.6	13.5	12.8	7.0	6.0	7.0	7.5	7.2	7.5	6.0	6.0
GEOGRAPHY	27.8	25.0	33.6	24.5	25.4	21.8	19.5	15.4	6.0	5.0	4.6	6.0	5.3	5.4	5.1	4.7

*Percentage of students receiving less than 50 as a final mark.

TABLE 10
FIRST YEAR COURSES - STUDENT MARK DISTRIBUTION
UNIVERSITY A

	MARK DISTRIBUTION				
	A(80-100)	B(70-79)	C(60-69)	D(50-59)	F
<u>ENGLISH</u>					
1969/70	7.9%*	53.4%	30.9%	4.0%	3.9%
1970/1	13.7	54.7	24.4	4.3	2.9
1971/2	16.3	58.5	19.4	2.8	2.9
1972/3	16.9	57.8	19.4	3.0	2.8
1973/4	19.9	59.4	16.1	1.8	2.2
1974/5	13.0	54.4	24.8	3.6	2.9
<u>FRENCH</u>					
1969/70	13.2%*	48.6%	29.7%	6.1%	2.5%
1970/1	16.7	51.2	24.8	5.4	1.9
1971/2	19.7	44.4	25.1	7.7	3.1
1972/3	21.1	44.1	26.5	6.1	2.2
1973/4	23.9	48.6	21.5	3.7	2.0
1974/5	22.1	43.5	25.8	6.0	2.5
<u>HISTORY</u>					
1969/70	21.6%	54.7%	19.1%	1.1%	3.4%
1970/1	16.9	63.2	15.8	1.3	2.8
1971/2	13.4	61.7	19.9	3.6	1.4
1972/3	11.6	54.0	26.6	3.1	4.7
1973/4	13.9	59.8	23.3	0.9	1.6
1974/5	10.5	55.7	26.8	3.0	2.8
<u>PHYSICS</u>					
1969/70	14.6%	24.7%	31.5%	17.4%	11.8%
1970/1	20.5	33.8	25.6	12.3	7.7
1971/2	17.0	40.1	28.3	8.6	6.0
1972/3	21.6	36.0	29.2	8.5	3.6
1973/4	17.8	45.6	27.1	7.1	2.4
1974/5	15.6	39.9	34.5	7.2	2.7
<u>MATHEMATICS</u>					
1969/70	14.3%	20.2%	22.9%	24.3%	18.3%
1970/1	18.4	19.3	22.9	20.1	19.3
1971/2	24.8	25.6	21.8	15.5	12.2
1972/3	23.6	23.0	22.6	18.4	11.6
1973/4	17.3	19.9	24.8	22.8	14.5
1974/5	18.5	21.0	22.7	24.1	13.2

* Indicates the percentage of students in each mark category.

TABLE 10 (Cont'd)
FIRST YEAR COURSES - STUDENT MARK DISTRIBUTION
UNIVERSITY B

	MARK DISTRIBUTION				
	A (80-100)	B (70-79)	C (60-69)	D (50-59)	F
<u>ENGLISH</u>					
1970/1 ^a	8.0% ^c	36.6%	48.6%		6.9%
1973/4 ^b	9.0	36.1	33.4	16.6	4.9
1974/5	7.2	40.0	36.3	9.1	7.4
1975/6	4.8	31.1	40.7	16.1	7.2
<u>FRENCH</u>					
1970/1 ^a	16.4%	29.9%	45.8%		7.9%
1973/4 ^b	28.4	37.6	17.9	9.6	6.6
1974/5	19.4	37.3	26.0	12.0	5.3
1975/6	24.4	35.3	24.1	9.8	6.3
<u>HISTORY</u>					
1970/1 ^a	4.9%	26.9%	54.0%		14.2%
1973/4 ^b	5.0	34.6	30.5	17.9	12.1
1974/5	8.0	24.1	33.0	17.8	17.1
1975/6	8.3	31.2	34.9	13.8	11.9
<u>PHYSICS</u>					
1970/1 ^a	20.5%	18.9%	42.8%		17.9%
1973/4 ^b	28.0	21.0	15.6	19.6	15.8
1974/5	23.9	23.0	20.8	18.7	13.5
1975/6	18.7	20.6	23.7	18.4	18.6
<u>MATHEMATICS</u>					
1970/1 ^a	28.5%	17.7%	36.1%		17.7%
1973/4 ^b	35.1	20.5	12.5	17.9	14.0
1974/5	27.2	10.0	20.3	16.1	16.3
1975/6	23.0	18.5	19.4	17.1	22.0

^aFor 1970/1 the following mark categories apply: A (75+); B(66-74); C(50-65);
F (below 50).

^bFor 1973/4 the following mark categories apply: A(75+); B(66-74); C(50-59);
F (below 50).

^cIndicates the percentage of students in each mark category.

TABLE 10 (Cont'd)
FIRST YEAR COURSES - STUDENT MARK DISTRIBUTION
UNIVERSITY C

	MARK DISTRIBUTION				
	A (80-100)	B (70-79)	C (60-69)	D (50-59)	F
<u>ENGLISH</u>					
1965/6	3.3%*	29.8%	32.3%	22.3%	12.4%
1968/9	2.5	46.9	34.6	9.6	6.5
1971/2	9.9	37.9	36.6	9.7	5.9
1973/4	7.5	38.3	35.3	11.9	7.0
1974/5	5.9	46.1	29.4	9.6	9.0
1975/6	9.9	44.3	31.0	10.4	4.4
<u>FRENCH</u>					
1965/6	14.6%	43.8%	33.3%	4.2%	4.2%
1968/9	6.4	37.3	38.2	11.8	6.4
1971/2	13.7	31.5	35.6	11.6	7.5
1973/4	11.6	44.9	21.7	14.5	7.3
1974/5	15.7	40.2	28.4	10.8	4.9
1975/6	16.5	39.7	31.4	9.1	3.3
<u>HISTORY</u>					
1965/6	10.3%	41.9%	26.5%	16.2%	5.1%
1968/9	3.3	41.8	37.5	12.4	5.1
1971/2	6.2	36.2	40.6	12.8	4.2
1973/4	4.7	42.3	34.3	9.2	9.5
1974/5	5.3	39.8	33.3	12.9	8.8
1975/6	5.3	36.9	40.1	11.4	6.3
<u>PHYSICS</u>					
1965/6	5.9%	32.4%	38.2%	17.7%	5.9%
1968/9	11.5	34.0	22.7	20.5	11.4
1971/2	21.1	23.7	13.2	23.7	18.4
1973/4	12.5	40.0	15.0	20.0	12.5
1974/5	15.8	21.1	31.6	18.4	13.2
1975/6	11.8	26.5	32.4	17.7	11.8
<u>MATHEMATICS</u>					
1965/6	8.8%	36.8%	33.3%	14.0%	7.0%
1968/9	11.3	25.0	15.0	25.0	23.8
1971/2	13.7	17.7	25.2	22.6	20.8
1973/4	11.1	22.2	22.2	26.4	18.1
1974/5	11.4	21.2	24.1	24.9	18.4
1975/6	7.4	28.9	32.8	16.7	14.2

* Indicates the percentage of students in each mark category.

TABLE 10 (Cont'd)
FIRST YEAR COURSES - STUDENT MARK DISTRIBUTION
UNIVERSITY D

	MARK DISTRIBUTION				
	A (80-100)	B (70-79)	C (60-69)	D (60-69)	F
<u>ENGLISH</u>					
1965/6	0.0%*	1.3%	18.9%	50.9%	28.9%
1968/9	.5	4.8	42.7	37.5	14.5
1971/2	1.7	13.1	50.4	25.8	9.0
1975/6	3.4	27.4	40.5	16.4	12.3
<u>FRENCH</u>					
1965/6	0.0%	9.3%	42.6%	40.7%	7.4%
1968/9	4.0	24.0	36.0	24.0	12.0
1971/2	5.7	28.6	40.7	21.4	3.6
1973/4	16.5	37.6	26.6	14.7	4.6
1975/6	19.2	23.3	27.5	20.8	9.2
<u>HISTORY</u>					
1965/6	1.0%	5.7%	23.8%	35.2%	34.3%
1968/9	.4	14.3	52.6	21.7	11.0
1971/2	2.7	21.3	45.7	22.0	8.3
1973/4	3.1	29.0	47.1	18.0	2.8
1975/6	5.2	32.9	36.1	12.5	13.3
<u>PHYSICS</u>					
1965/6	0.0%	5.8%	40.3%	37.2%	16.8%
1968/9	5.3	14.5	33.7	26.0	20.4
1971/2	11.2	8.4	26.8	26.8	26.8
1973/4	24.0	21.0	21.0	17.3	16.5
1975/6	29.2	25.0	16.6	18.8	10.4
<u>MATHEMATICS</u>					
1965/6	4.5%	6.4%	19.1%	20.0%	50.0%
1968/9	7.0	15.0	22.0	22.0	34.0
1971/2	16.1	22.5	29.1	18.9	13.4
1973/4	18.8	24.0	27.8	21.2	8.2
1975/6	24.0	22.7	21.7	18.8	12.8

*Indicates the percentage of students in each mark category.

TABLE 10 (Cont'd)
FIRST YEAR COURSES - STUDENT MARK DISTRIBUTION
UNIVERSITY E

	MARK DISTRIBUTION				
	A (80-100)	B (70-79)	C (60-69)	D (50-59)	F
<u>ENGLISH</u>					
1968/9	3.8%*	31.5%	44.7%	15.1%	4.7%
1971/2	10.9	38.2	31.2	10.3	9.4
1974/5	9.5	33.0	32.5	8.0	16.9
1975/6	11.4	42.8	30.7	7.3	7.6
<u>FRENCH</u>					
1968/9	8.2%	23.9%	35.3%	23.1%	9.5%
1971/2	17.6	35.6	26.9	12.7	7.1
1974/5	13.6	44.8	27.1	7.8	6.8
1975/6	15.3	43.1	27.3	5.7	8.7
<u>HISTORY</u>					
1968/9	4.1%	19.7%	31.7%	29.0%	15.6%
1971/2	7.2	22.3	37.1	14.6	18.8
1974/5	5.7	19.0	30.0	22.0	23.3
1975/6	7.8	25.5	31.1	17.9	17.7
<u>PHYSICS</u>					
1968/9	5.2%	14.4%	32.0%	29.8%	18.5%
1971/2	12.3	15.8	30.3	21.8	19.7
1974/5	12.1	24.6	31.1	19.1	13.1
1975/6	14.0	17.9	28.8	22.1	17.1
<u>MATHEMATICS</u>					
1968/9	11.4%	14.2%	17.2%	23.4%	33.8%
1971/2	15.6	14.3	15.3	21.2	33.6
1974/5	22.8	18.8	18.6	16.9	22.9
1975/6	14.8	16.6	21.4	20.1	27.1

* Indicates the percentage of students in each mark category.

C. QUESTIONNAIRES

QUESTIONNAIRES

ENGLISH-LANGUAGE QUESTIONNAIRES

Sixteen separate English-language questionnaires were constructed for the six subjects studied, as follows:

ENGLISH (4): (a) secondary school level 4; (b) secondary school level 5; (c) colleges of applied arts and technology (CAATs); (d) university level 1

ANGLAIS (1): secondary school year 5. Because of the very small population of Anglais courses offered in Ontario universities, flexible interview schedules using the secondary school Anglais questionnaires as a model were employed for data collection.

FRENCH (2): (a) secondary school year 5; (b) university year 1

HISTORY (2): (a) secondary school year 5; (b) university year 1

PHYSICS (3): (a) secondary school levels 3 and 5; (b) CAATs year 1; (c) university year 1

MATHEMATICS (4): (a) secondary school year 4; (b) secondary school year 5; (c) CAATs year 1; (d) university year 1

Each questionnaire was divided into four sections (time allocation, which in most questionnaires was incorporated into section IV, was treated as a separate section in French).

I. Background of the Instructor

II. Course Planning and Instruction

III. Aims of the Course

IV. Course Content and Student Competence

V. (French only) Time Allocation

Sections I and II are virtually identical across the range of subjects studied. This material has, therefore been reproduced only once, to avoid unnecessary repetition. The minor variations that exist from subject to subject, or within questionnaires addressed to different levels of the same subject, have been indicated by foot-of-page notes consecutively numbered within each section.

The content of Sections III and IV varied greatly from subject to subject, although instructions to the respondent often followed the same pattern. Where such repetition does exist, the reader has been referred to the appropriate section of an earlier questionnaire; otherwise all material has been printed in full and the courses to which it applies indicated. Since the numbering system within the questionnaires varied from subject to subject, these internal numbers have not been reproduced.

SECONDARY - POST-SECONDARY INTERFACE STUDY

NATURE OF PROGRAMS

COURSE DESCRIPTION QUESTIONNAIRE

This questionnaire is part of a study of the relationships among courses in each of seven subject areas offered in Ontario secondary schools, community colleges and universities. The Ontario Ministries of Colleges and Universities and Education contracted this phase of a three-phase study to a team from Queen's University and St. Lawrence College. The instrument has been developed in cooperation with teachers from secondary schools, community colleges and universities.

You, and a number of other instructors, have been selected by a random process to fill in this questionnaire with regard to a particular course you teach. Responses to the questionnaire will be treated anonymously and the analysis and interpretation of findings will not be used to single out individuals or institutions.

The questionnaire consists of four [five] sections:

- I. Background of the Instructor
- II. Course Planning and Instruction
- III. Aims of the Course
- IV. Course Content and Student Competence
- ¹V. Time Allocation

When the questionnaire is completed, it should represent as accurate a picture as possible of a particular course you teach. It should also provide us with a perspective of your preferences regarding the competencies of students.

Feel free to use your course outlines, student assignments, texts and any other resources that might help you with your responses.

1. French only.

SECTION IBACKGROUND OF THE INSTRUCTOR

For most items, respond by placing the number of the response you consider appropriate in the box to the right of the item. Other items requiring more detailed response will be so indicated with space left accordingly.

How many years have you been teaching at a secondary school¹ (to the nearest full year)?

How many years have you been teaching this course or its equivalent? (to the nearest full year)?

² Is the course identified on this questionnaire in your area of specialization (background, training, special experience)?

1. yes, it is my area of specialization
2. yes, it is closely related to my area of specialization
3. no

Have you ever taught at another institutional level?

1. no
2. elementary
3. community college
4. university
5. other (please specify) _____
6. more than one other (please specify) _____

If you selected 2,3,4,5 or 6 as a response to the item above, how many years did you teach at the other institutional level(s)? (to the nearest full year)

What is the highest academic degree you now hold?

1. doctorate
2. master's
3. honours bachelor's (4 year)
4. bachelor's
5. post-secondary diploma
6. other (please specify) _____

² How many years of related professional (non-teaching) experience do you have? (to the nearest full year)

1. Or CAAT or University
2. Omitted in University questionnaire

³ To which OSSTF/AEFO certification category do you belong?

1. Category 1 (OSSTF) or Category A1 (AEFO)
2. Category 2 (OSSTF) or Category A2 (AEFO)
3. Category 3 (OSSTF) or Category A3 (AEFO)
4. Category 4 (OSSTF) or Category A4 (AEFO)

☐

³ What position do you hold at your school?

1. principal
2. vice-principal
3. department head
4. assistant or associate head
5. teacher
6. (other) please specify _____

☐

⁴ To which college teaching category do you belong?

1. teaching master
2. instructor
3. counsellor
4. other (please specify) _____

☐

⁵ To which university category do you belong?

1. professor
2. associate professor
3. assistant professor
4. lecturer/instructor
5. other (please specify) _____

☐

3. Secondary school only
4. CAAT only
5. University only

SECTION IICOURSE PLANNING AND INSTRUCTION

In this section, we would like to obtain detailed information on course planning, student evaluation, instructional materials and methods. If the alternatives we have provided are not adequate, please feel free to add or comment as necessary.

Indicate to what extent the considerations listed below influenced your teaching of this course.

RESPONSE KEY - 0 - not at all

1 - to a small extent

2 - to a moderate extent

3 - to a great extent

9 - not applicable

interests of students

☐

knowledge of subject of incoming students

☐

relationship between this course and others taken concurrently

☐

information you had concerning courses, programs, and career patterns the majority of students take upon successfully completing your course

☐

Ontario Ministry of Education guidelines

☐

course outline assigned to you

☐

special interests or training you might have

☐

content and approach of principal text(s)

☐

staffing (please specify)

☐

other (please specify)

☐

Are there formal or strongly recommended prerequisites for this course?

1. yes

2. no

If you responded "yes" to item #2, identify the prerequisite course(s) and/or describe the prerequisite experience, knowledge and training required.

In parts of this questionnaire, we will require you to consider students as a group, but we are well aware that there may be substantial difference(s) among competencies of individual students enrolled in this course. Generally speaking, how much variation do you normally find among incoming students?

1. do not know
2. very little
3. a moderate amount
4. a great deal

☐

In what areas (knowledge, skills, attitudes) do you find the greatest variation among incoming students?

What is the quality of the preparation of students coming into your course?

1. poor
2. fair
3. good
4. excellent

☐

In what areas (knowledge, skills, attitudes) do you think incoming students were particularly well-prepared for your course this year?

In what areas (knowledge, skills, attitudes) do you think incoming students should have been better prepared for your course this year?

Listed below are a variety of instructional techniques. Respond to this item in terms of IN-CLASS CONTACT TIME including formally scheduled LABORATORY periods.

Place a zero in the box to the right of those techniques which you HAVE NOT USED this year in the teaching of this course.

In the box to the right, allocate the approximate percentage of IN-CLASS TIME devoted to each of the techniques you HAVE USED this year in the teaching of this course.

Your percentages should total 100.

1	dictation	<input type="checkbox"/>	<input type="checkbox"/>
1	translations by students (exclusive of testing)	<input type="checkbox"/>	<input type="checkbox"/>
1	language laboratory	<input type="checkbox"/>	<input type="checkbox"/>
	lecture (with or without provision for student questions)	<input type="checkbox"/>	<input type="checkbox"/>
	Socratic (question and answer technique, interaction between students and instructor)	<input type="checkbox"/>	<input type="checkbox"/>
2	demonstrations	<input type="checkbox"/>	<input type="checkbox"/>
2	laboratory work, experiments	<input type="checkbox"/>	<input type="checkbox"/>
3	practically-oriented work-- computers, laboratory work, experiments	<input type="checkbox"/>	<input type="checkbox"/>

4 classroom study (students use class time to complete required course work and, if needed, to receive extra help from instructor, including library or resource centre activity)

--	--

individualized instruction (each student proceeds at his own speed; e.g., programmed learning, learning modules)

--	--

5 simulations, games

--	--

6 seminar, tutorial (with or without additional instructors; this technique may include student presentation)

--	--

small group activities (with the instructor supervising a number of small groups at the same time)

--	--

student presentations (exclusive of seminars, tutorials)

--	--

testing

--	--

5 library research (as a class activity; exclusive of independent study)

--	--

audiovisual (television, tapes, films, radio, etc.)

--	--

7 field trips, visits by resource personnel

--	--

8 dramatic presentations (plays, role-playing, excerpts from plays, etc.)

--	--

other (please specify) _____

--	--

Estimate the average OUT-OF-CLASS TIME students spend on your course. Estimate this as a total percentage of class time including regularly scheduled laboratory periods. For example, if you expect students to work 2 hours out-of-class for every one hour of class time, you would place 200 in the box supplied.

--	--	--

9 What proportion of the instruction in the course is given in English? Express this as a percent of total instruction time.

--	--	--

10 What proportion of the instruction in the course is given in French? Express this as a percent of total instruction time.

--	--	--

10 How much time do you normally spend in review of material taken prior to this course? Estimate this as a percent of total class time.

--	--

To what extent do your students utilize the following resources in this course?

RESPONSE KEY - 0 - not at all

1 - a little

2 - to a moderate extent

3 - to a great extent

9 - not applicable

- main text ☐
- main text plus supplementary text(s) ☐
- two or more main texts or materials from other texts ☐
- 11 simplified editions of great works ☐
- 11 works of criticism ☐
- 12 laboratory equipment ☐
- reference books, dictionaries, encyclopedias, etc. ☐
- 13 documents, journals and scholarly reviews ☐
- 14 individualized learning packages ☐
- 15 laboratory and/or computer equipment ☐
- 16 other classroom resources (magazines, newspapers, etc.) ☐
- audiovisual media (television, tapes, film strips, etc) ☐
- 11 language laboratory materials ☐
- mimeographed materials (lecture notes, etc.) ☐
- other (please specify) _____ ☐

If you use one or two primary texts in this course, what is (are) the title(s), author(s), publisher(s), date(s) of publication?

Some courses are partly or completely designed to allow students to progress at individual rates. Students are allowed to start at a point consistent with their abilities at the beginning of a course and move along with little reference to or involvement with other students. To what extent does this course follow this pattern?

0 - not at all

1 - a little to a small extent

2 - to a moderate extent

3 - to a great extent ☐

2 How much time do you normally spend in review of material taken prior to this course? Estimate this as a percentage of total class/laboratory time. ☐ ☐

Is it possible for students to be exempt from writing the final examination in this course on the basis of term work?

1. yes

2. no

3. not applicable (no final examination in this course) ☐

If you answered "yes" to item #15, describe under what conditions this may take place.

Estimate the percentage of the students' final mark (or grade, e.g., pass/fail, letter grade) normally allocated to each category of assessment (from 0% to 100%). The percentages should total 100%.

final examination	<input type="text"/>	<input type="text"/>
mid-term examination	<input type="text"/>	<input type="text"/>
other written tests	<input type="text"/>	<input type="text"/>
other oral tests	<input type="text"/>	<input type="text"/>
17 problems, exercises	<input type="text"/>	<input type="text"/>
18 notebooks	<input type="text"/>	<input type="text"/>
2 laboratory reports and/or notebooks	<input type="text"/>	<input type="text"/>
class participation	<input type="text"/>	<input type="text"/>
17 laboratory and/or other class participation	<input type="text"/>	<input type="text"/>
individual papers (essays, reports, book reports, ¹⁹ etc.)	<input type="text"/>	<input type="text"/>
17 group or team papers, projects	<input type="text"/>	<input type="text"/>
3 individual projects (e.g. oral presentations)	<input type="text"/>	<input type="text"/>
individual projects (exclusive of essays, reports)	<input type="text"/>	<input type="text"/>
group or team projects	<input type="text"/>	<input type="text"/>
group or team papers	<input type="text"/>	<input type="text"/>
effort	<input type="text"/>	<input type="text"/>
attendance	<input type="text"/>	<input type="text"/>
20 individual oral presentations (prepared or spontaneous speeches)	<input type="text"/>	<input type="text"/>
20 group dramatic presentations	<input type="text"/>	<input type="text"/>
other (please specify) _____	<input type="text"/>	<input type="text"/>

Notes for Section II

- | | |
|---|---|
| 1. Secondary School Anglais and French only | 11. Secondary School Anglais and French only |
| 2. Physics only | 12. University Physics only |
| 3. Mathematics only | 13. Omitted in Anglais, French, University Physics, and Mathematics |
| 4. Omitted in University English, History | 14. Omitted in University English |
| 5. Secondary School History only | 15. Mathematics only |
| 6. Omitted in Secondary School History | 16. Omitted in University Physics |
| 7. Omitted in Mathematics | 17. Physics and Mathematics only |
| 8. English and Secondary School Anglais | 18. Secondary School Anglais, French, and Mathematics only |
| 9. Anglais only | 19. Omitted in Physics and Mathematics |
| 10. French only | 20. English, Secondary School Anglais and French only |

SECTION IIIAIMS OF THE COURSE

Necessarily, the content of this section of the questionnaire varies greatly because of the differing types of subjects considered and the level at which the subject is taught. The teacher guidelines and response keys, which were identical for all subjects but mathematics, are printed immediately below, followed by a complete listing of the aims of the course for each subject, in the order English, Secondary School Anglais, French, History, Physics. The guidelines for mathematics, which were somewhat different, are then reproduced together with the aims for mathematics courses. For all subjects the aims were expressed identically in questionnaires prepared at secondary school, CAAT, and university levels.

The aims listed below have been stated in very general terms. Please add additional aims if the list is not sufficiently inclusive with regard to your course.

Please place the number from the response key which corresponds to the emphasis you give to each item in your course. Indicate your response in the box to the right of each item.

RESPONSE KEY

- 0 - No emphasis
- 1 - Very little emphasis
- 2 - Moderate emphasis
- 3 - A great deal of emphasis
- 9 - Not applicable

ENGLISH

EMPHASIS

- | | |
|---|--------------------------|
| 1. Explore the universal elements in human experience | <input type="checkbox"/> |
| 2. Develop student's ability to listen effectively. | <input type="checkbox"/> |
| 3. Develop sense of self-worth and confidence. | <input type="checkbox"/> |
| 4. Cultivate student's discrimination in reading. | <input type="checkbox"/> |
| 5. Develop respect and tolerance for diverse opinions and ideas; encourage a broader perspective. | <input type="checkbox"/> |
| 6. Promote fluent and grammatically acceptable <u>spoken</u> English. | <input type="checkbox"/> |
| 7. Develop appreciation of the historical development of English literature. | <input type="checkbox"/> |

8. Develop student's ability to organize and integrate ideas and materials. ☐
9. Develop an attitude of enquiry. ☐
10. Develop discipline to initiate a piece of work and complete it in a given time. ☐
11. Promote fluent and grammatically acceptable written English. ☐
12. Improve student's understanding of the characteristics of the language. ☐
13. Improve student's reading ability. ☐
14. Develop student's desire to read. ☐
15. Develop awareness of the literary and cultural heritage of the English language. ☐
16. Enrich the student's spoken and written vocabulary. ☐
17. Develop student's creative potential. ☐
18. Develop an appreciation of literature. ☐
19. Develop an appreciation of media other than literature (e.g., film, television, etc.) ☐
20. Develop student's ability to think critically. ☐
21. Other, please specify _____ ☐

ANGLAIS

EMPHASIS

1. Develop ability to listen effectively. ☐
2. Promote fluent and grammatically acceptable spoken English. ☐
3. Promote fluent and grammatically acceptable written English. ☐
4. Develop ability to organize and integrate ideas and materials. ☐
5. Develop creative writing ability. ☐
6. Improve reading ability. ☐
7. Develop desire to read. ☐
8. Enrich spoken and written vocabulary. ☐
9. Develop the discipline to initiate a piece of work and complete it in a given time. ☐
10. Develop an appreciation of literature written and/or translated in the English language. ☐
11. Develop an appreciation of Canadian literature. ☐
12. Develop an appreciation of media other than literature (film, T.V., radio, etc.) ☐
13. Develop student's ability to think critically. ☐

14. Promote understanding of the ways language can be used in a variety of social contexts.
15. Develop an understanding of different linguistic interpretations that can result from differences in the English and French languages.
16. Develop appreciation of the historical development of English literature.
17. Explore the universal elements in human experience through the study of literature.
18. Other, please specify.

--	--

7

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1

7

FRENCH

1. Skill in reading.
 2. Skill in writing.
 3. Aural comprehension.
 4. Skill in speaking.
 5. Knowledge of literary history.
 6. Sensitivity to beauty and elegance in language.
 7. Appreciation of and sensitivity to cultural variety.
 8. Application of techniques of literary criticism.
 9. Appreciation of language as a medium of human thought.
 10. Interest in language studies.
 11. Respect for precision of expression (oral and/or written).
 12. Self-confidence in French.
 13. Self-reliance.
 14. Understanding of self
- Other(s), please specify _____
- 15.
 - 16.
 - 17.

EMPHASIS

7

11

10

11

11

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11

11

11

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7

11

□

11

11

HISTORY

EMPHASIS

- | | |
|---|--------------------------|
| 1. Acquire a specific body of historical information. | <input type="checkbox"/> |
| 2. Develop skills required for analysis and interpretation of historical information. | <input type="checkbox"/> |
| 3. Develop the ability to examine a historical problem from a variety of perspectives. | <input type="checkbox"/> |
| 4. Consider historical issues in terms of the context of the time. | <input type="checkbox"/> |
| 5. Understand the relationship between historical events and contemporary issues. | <input type="checkbox"/> |
| 6. Develop an awareness of the complexity of historical events and contemporary issues. | <input type="checkbox"/> |
| 7. Develop an awareness of one's relationship to society. | <input type="checkbox"/> |
| 8. Develop an awareness of the growing interdependence of nations and people in the modern world. | <input type="checkbox"/> |
| 9. Appreciate one's cultural heritage. | <input type="checkbox"/> |
| 10. Develop an awareness of the diversity of cultures. | <input type="checkbox"/> |
| 11. Develop the skills required for preparation and presentation of written work. | <input type="checkbox"/> |
| 12. Develop the skills required for preparation and presentation of oral work. | <input type="checkbox"/> |
| 13. Encourage high scholastic standards. | <input type="checkbox"/> |
| 14. Develop an attitude which promotes critical assessment of new information. | <input type="checkbox"/> |
| 15. Develop an awareness of the approaches employed by related disciplines (e.g., economics, political science, sociology). | <input type="checkbox"/> |
| 16. Increase student's interest in history. | <input type="checkbox"/> |
| 17. Develop: | |
| 17.1 respect and tolerance for diverse opinions and ideas | <input type="checkbox"/> |
| 17.2 independence; sense of responsibility; | <input type="checkbox"/> |
| 17.3 self-confidence; | <input type="checkbox"/> |
| 17.4 social conscience (concern for others); | <input type="checkbox"/> |
| 17.5 social skills (ability to work and interact with others). | <input type="checkbox"/> |
| 18. Other(s), please specify _____ | <input type="checkbox"/> |

PHYSICS

EMPHASIS

1. The student should acquire an attitude of scientific curiosity. ☐
2. The student should be able to think rationally and in particular be able to:
 - 2.1 organize data presented in a problem and arrive at a solution ☐
 - 2.2 evaluate in empirical terms reports of observed phenomena ☐
3. The student should understand the scientific method.
4. The student should be able to apply the scientific method to the study of the behavior of matter under the influence of the forces of nature and to study the properties of those forces including:
 - 4.1 the ability to design and set up an experiment ☐
 - 4.2 the ability to collect experimental data ☐
 - 4.3 the ability to organize and analyze experimental data ☐
 - 4.4 the ability to interpret the results of experiments in terms of mathematics and/or physical models ☐
 - 4.5 the ability to communicate the results of experiments concisely, critically and profitably with knowledge and understanding ☐
5. The student should recognize technological and engineering activities as applications of the principles of physics and aim to understand these activities in such terms. ☐
6. The student should be aware of the historical development of ideas and concepts in physics and the evolving nature of its theories. ☐

ADDITIONAL AIMS

7. ☐
8. ☐

MATHEMATICS

The following note prefaced Sections III and IV in the mathematics questionnaire.

This part of the questionnaire relates to mathematics only. It has two major sections as follows:

- III. General Aims and Objectives
- IV. Course Content and Achievement Levels

Each section is important, as your responses will provide

the central data for our analysis of mathematics courses across the interface. We know that completing them will require a good deal of time, but we are relying on your goodwill and cooperation to help us to obtain valid and reliable data.

Specific instructions and suggestions for completing the table in each section are given before it. To make the task of responding easier, it may be worthwhile for you to have your course outline and/or any course text(s) you use available for easy reference.

Table I which follows lists a number of general aims and objectives of teaching and learning mathematics.

Please consider each of them in relation to how you presently teach your course. Then, enter the appropriate numeral in the "degree of emphasis" column using the response code below.

RESPONSE CODE

- 0 - No emphasis
- 1 - Little emphasis
- 2 - Moderate emphasis
- 3 - A great deal of emphasis
- 9 - Not applicable

You should consider as valid aims, implicit ones realized by your teaching as well as those explicitly stated in a course outline or guide. However, please be realistic and enter '0's and '9's for aims which are not emphasized or not applicable.

Feel free to add and respond to any aims not listed which you believe apply to your course, and to make additional comments in the space provided under the table.

TABLE 1

GENERAL AIMS AND OBJECTIVES IN MATHEMATICS TEACHING AND LEARNING

GENERAL AIM OR OBJECTIVE

DEGREE OF EMPHASIS
GIVEN IN COURSE

The student will develop and/or acquire:

1. ability to use and understand fundamental terminology;
2. conceptual and practical tools for mathematical application;

☐
☐

3. skills needed for further courses or work in mathematics;
4. ability to apply knowledge and skills to other subject areas or situations;
5. skills related to subsequent occupations;
6. sound and systematic study habits;
7. ability to work independently;
8. ability to assess own skills and abilities;
9. ability to estimate an answer;
10. ability to check the reasonableness of an answer;
11. ability to construct, use and interpret concrete models and mathematical diagrams;
12. ability to understand a problem stated in English and translate it into mathematical language to solve it;
13. ability to use symbolic notation;
14. ability to read a mathematical text book;
15. familiarity with basic literature and use of resources (library, texts, other students and colleagues)
16. ability to write a proof;
17. ability to make and test generalizations;
18. ability to work intuitively and use appropriate levels of intuition and rigour
19. ability to understand logical argument and the direction of an implication;
20. ability to use examples and counter-examples
21. ability to think logically in order to solve problems systematically and make rational decisions;
22. ability to solve multi-stage problems;
23. ability to formulate and work from usable definitions;
24. appreciation and/or understanding of the underlying logical structure of mathematics;
25. in-depth understanding of some area or topic in mathematics;
26. appreciation of the nature and importance of proof in mathematics;
27. appreciation of the contribution of mathematics to civilization;
28. appreciation of the power of mathematics to solve complex problems;
29. understanding and appreciation of the unity of mathematics through the inter-relationships of its various branches;

30. appreciation of mathematical elegance, e.g. in a proof; ☐
31. judgment and discrimination about appropriate procedures and their relevance to solving specific problems; ☐
32. positive attitudes for mathematics; ☐
33. appreciation of mathematics as a human activity aimed at extending man's knowledge, and his understanding and use of his environment; ☐

Additional Aims or Objectives:

34. ☐
35. ☐

Comments:

SECTION IVCOURSE CONTENT AND STUDENT COMPETENCE

Variation among the kinds of questions asked was greater here than in Section III. Accordingly Section IV is printed in full for each of the six subjects. Minor variations among university, CAAT and secondary school questionnaires in each subject are noted where relevant.

ENGLISH

We have divided this section into two parts:

- A. General Organization of the Course
- B. Specific Objectives

A. General Organization of the Course

The questions which follow seek general information about the content of your course, its scope and emphasis.

- I. Estimate the percentage of your course devoted to formal instruction in:

- | | | | |
|--|----------------------|----------------------|----------------------|
| 1. literature | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 2. media other than literature | | | |
| a) critical assessment | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| b) media production | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| ¹ 3. language skills | | | |
| a) reading | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| b) writing | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| c) speaking | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| ² 3. language skills (reading, writing, speaking) | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Your percentages should total 100.

- II. Literature (If your course includes a literature component, please respond to the items in this section.)

A. Approach

1. Indicate the main approach or approaches you use in organizing your course:

- 1. a variety of approaches (more than 2)
- 2. by form and style
- 3. by genre

1ST

- 4. by ideas and concepts
- 5. by modes (e.g., comedy, tragedy, satire)
- 6. thematic (e.g., women in literature)

2ND

- 6.1 If you use a thematic approach indicate your main theme(s)

(if more than one)

-
7. by culture or country

8. historical

9. other, please specify _____

B. Emphasis

1. Estimate the proportion of time in the literature segment of your course you give to each genre. Place a percent (0 to 100) in the box to the right of each genre. Your percentages should total 100.

- | | | | |
|--------------------------------|----------------------|----------------------|----------------------|
| 1. essays | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 2. novels | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 3. plays | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 4. poems | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 5. short stories | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 6. other, please specify _____ | <input type="text"/> | <input type="text"/> | <input type="text"/> |

2. Estimate the proportion of time in the literature segment of your course you give to pre-twentieth century and twentieth century literature. Place an appropriate percentage (0 to 100) in the box to the right. Your percentages should total 100.

- | | | | |
|--------------------------|----------------------|----------------------|----------------------|
| 1. pre-twentieth century | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 2. twentieth century | <input type="text"/> | <input type="text"/> | <input type="text"/> |

3. Estimate the proportion of time in the literature segment of your course you give to each of the following. Place an appropriate percent (0 to 100) in the box to the right of each country/culture. Your percentages should total 100.

- | | | | |
|------------------------------|----------------------|----------------------|----------------------|
| 1. Canadian | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 2. American | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 3. British | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 4. other English speaking | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| 5. literature in translation | <input type="text"/> | <input type="text"/> | <input type="text"/> |

B. Specific Objectives

In this section, we have found it necessary to emphasize skills because the broad array of content areas is too extensive to provide for meaningful analysis.

You are asked to respond with respect to three main areas:

1. language
2. media other than literature
3. literature

Beside each objective, you are asked to fill in responses in four columns. The first column seeks your perception of the average level of competence you find students have acquired previous to taking your course. The second column seeks your perception of the average level of competence you expect students to achieve by the end of your course. In the third column, we ask you to indicate what average level of competence you would prefer your incoming students to have attained. This judgment should be made in as realistic a manner as possible. In the fourth column, we ask you to indicate the level of competence you might expect from students if they had already attained your preferred level of competence at entry.

In summary, Column 1 - your estimate of the average level of competence of incoming students;

Column 2 - your estimate of the average level of competence normally attained by your students at the completion of the course;

Column 3 - your preference regarding the average level of competence of incoming students;

Column 4 - given your preferred level of competence at entry, your expectation regarding the average level of competence to be attained by students at the end of the course.

We have chosen to use average level of competence to describe the general level of competence of a group of students even though we realize there can be great variations among students in a particular group. This compromise approach will enable us to summarize information readily and yet does not appear to introduce major problems in responding to the items.

OBJECTIVES RESPONSE KEY

We are required to compare our responses across institutions in this discipline. It is very important, therefore, that instructors in both secondary schools (year 4) and community colleges (year 1)³ use the same categories to mean approximately the same things. We have provided you with a response system ranging from 0 to 7 to allow you to make distinctions more subtle than the descriptive categories offer. The five descriptive categories are designed to act as general guidelines.

Place the appropriate number from the response key in the box to the right of each item.

RESPONSE KEY

0	1	2	3	4	5	6	7
No Competence	Minimal Competence		Moderate Competence		Competence in Varied Situations, Some Originality		Mastery, Competence in High Level, Creative Situations

If for some reason you do not wish to respond to a particular item (e.g., item does not apply to your course, you have some uncertainty about the response), place a diagonal line across the box adjacent to the item.

Objectives: For secondary school year 4 and CAAT. For secondary school year 5 and University, these categories were placed in the order Literature, Media, Language, but the content of each section was identical.

	ACTUAL		PREFERRED	
	1	2	3	4
Objective	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence to be Attained Given Preferred Level at Entry

Language

1. Comprehend a variety of materials (essential meaning and significant details).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Understand the subtler nuances of language (e.g., emotional connotation of words, imaginative effects of language use).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Distinguish between essential and non-essential information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Support generalizations with appropriate evidence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Objective	ACTUAL		PREFERRED	
	1	2	3	4
	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence to be Attained Given Preferred Level at Entry
5. Apply inferential skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Analyze language in terms of:				
a) grammar				
b) linguistics (origin and characteristics).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Apply flexibility in the speed of reading appropriate to content and purpose.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Write an effective sentence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Write an effective paragraph.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Demonstrate facility in writing in terms of planning, organization, presentation and editing:				
a) essays, (expository prose)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) creative writing (personal essays, descriptions, poems, short stories, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) precis, summary and abstract	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) memos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) letters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) editorials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Literature</u>				
1. Analyze literature through an examination of its characteristics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Analyze literature in terms of the relationship of organization to meaning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Identify literary genres by examination of its characteristics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Write a literary critique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Objective	ACTUAL		PREFERRED	
	1	2	3	4
	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence to be Attained Given Preferred Level at Entry

5. Apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Explain the relationship between the text and extrinsic materials (e.g., biographical, historical, mythological).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Analyze literary forms in terms of: a) stylistic techniques (e.g., style, tone, form); b) connotation (e.g., word, image, sound).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Evaluate written and oral critiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS:

ANGLAIS

Certain parts of secondary school Anglais , Section IV, were identical with the same section in secondary school English. These instances have been indicated, and only those parts of the Anglais Section IV that differ significantly have been reproduced here.

A. General Organization of the Course

The questions which follow seek general information about the content of your course, its scope and emphasis.

- I. Estimate the percentage of your course devoted to formal instruction in: (your percentages should total 100).

1. Language skills	
a) reading	<input type="checkbox"/>
b) listening	<input type="checkbox"/>
c) language study (analysis of grammar, linguistics, etc.)	<input type="checkbox"/>
d) formal and informal speaking	<input type="checkbox"/>
e) writing	<input type="checkbox"/>

f) other, please specify _____

--	--

- 2. Media other than literature
 - a) critical assessment of newspapers, magazines

--	--
 - b) critical assessment of television and radio

--	--
 - c) media production (videotapes, film, etc.)

--	--

3. Literature

II.Literature

A. Approach : Identical with English Section IV, AIIA.

B. Emphasis

- 1. Identical with English Section IV, AIIB.
- 2. Estimate the proportion of time in the literature segment of your course you give to pre-twentieth and twentieth century literature. Place a percent (0 to 100) in the box to the right of each genre. Your percentages should total 100.

- 1. pre-twentieth century

--	--	--
 - 2. 1900-1940

--	--	--
 - 3. 1940 - present

--	--	--
- | | | |
|---|---|---|
| 1 | 0 | 0 |
|---|---|---|

- 3. Estimate the proportion of time in the literature segment of your course you give to each of the following countries/ cultures. Place a percent (0 to 100) in the box to the right. Your percentages should total 100.

- 1. Canadian other than French

--	--	--
 - 2. French Canadian in translation

--	--	--
 - 3. American

--	--	--
 - 4. British

--	--	--
 - 5. Other English speaking

--	--	--
 - 6. Other countries in translation

--	--	--
- | | | |
|---|---|---|
| 1 | 0 | 0 |
|---|---|---|

B. Specific Objectives : Identical with English, Section IVB.

OBJECTIVES RESPONSE KEY : Identical with English Objectives Response Key.

Objective	ACTUAL		PREFERRED	
	1	2	3	4
	Level of Competence At Entry	Level of Competence Normally Attained	Preferred Level of Competence	Level of Competence to be Attained Given Preferred Level at Entry
<hr/>				
I. Language skills				
In reading:				
1. Comprehend the meaning of a passage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Distinguish between essential and non-essential information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Apply flexibility in the speed of reading appropriate to content and purpose.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Apply inferential skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In writing:				
5. Write an effective summary of materials read.				
6. Demonstrate facility in writing in terms of planning, organization, presentation and editing:				
a) expository writing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) persuasive or argumentative essay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) business letter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) personal letter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) summary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Demonstrate facility in imaginative, creative writing:				
a) prose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) poetry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Apply appropriate structure, grammar, and conventions of written English.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Objective	ACTUAL		PREFERRED	
	1	2	3	4
	Level of Competence At Entry	Level of Competence Normally Attained	Preferred Level of Competence	Level of Competence to be Attained Given Preferred Level at Entry
9. Use correct spelling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Demonstrate effective organization in the writing of a paragraph.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Present an argument effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Use effective note-taking techniques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In speaking:				
13. Present an oral summary of a speech, story or report.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Speak in a style appropriate to subject matter and audience.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Present the following effectively:				
a) an argument, formal debate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) a story to amuse or entertain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) a formal speech (e.g., in public speaking)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Contribute effectively in a small group discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Use language appropriately in a variety of social contexts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
II. Language Study				
1. Analyze language in terms of grammar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Apply appropriate terminology in analysis of language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Analyze problems arising from French and English language differences (idioms, imagery, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Objective	ACTUAL		PREFERRED	
	1	2	3	4
	Level of Competence At Entry	Level of Competence Normally Attained	Preferred Level of Competence	Level of Competence to be Attained Given Preferred Level at Entry
<hr/>				
III. Media Other Than Literature				
1. Critically assess				
a) film	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) magazines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) newspapers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) television/radio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) drama	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Critically assess advertising in terms of:				
a) language used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) design and presentation (oral and/or written)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Critically assess the language of politics (e.g., political speeches, editorials) in terms of:				
a) language used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) design and presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Contribute to the presentation of:				
a) a film	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) a videotape or radio presentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) a play	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) an oral interview	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IV. Literature				
1. Apply a critical vocabulary in the evaluation of the range, nature and quality of a particular work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Analyze literary forms in terms of:				
a) stylistic techniques (e.g., plot, style, characterization)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) connotation (e.g., word, image, sound).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other Objectives:

Comments:

FRENCH

- 1. Description of objectives table and Objectives Response Key identical with that in English Section IVB.
- 2. Table of Objectives

Objective	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence To be Attained Given Preferred Level at Entry
1. Grammar - basic morphology and syntax	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Grammar - conjugation of all regular and auxiliary verbs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Grammar - common tenses and moods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Ability to apply grammar in writing and in speaking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Ability to express ideas clearly and correctly in written French.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Skill in translation - English to French.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Skill in translation - French to English.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Vocabulary - general.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Vocabulary - idiomatic expressions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Vocabulary - Canadianisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	ACTUAL		PREFERRED	
	1	2	3	4
Objective	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence To be Attained Given Preferred Level at Entry
11. Reading Comprehension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Aural comprehension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Fluency in spoken French.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Literary history.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Concepts of literary criticism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Vocabulary of literary criticism.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Understanding of cultural differences and similarities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:				
18.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Size of Vocabulary

Please try to describe in quantitative terms the actual and preferred rate of vocabulary-building using the categories listed below. Use the following response key.

RESPONSE KEY

- 0 - have not quantified
- 1 - below 1000 words
- 2 - between 1000 and 2000 words
- 3 - between 2000 and 3000 words
- 4 - above 3000 words

Actual	1. Entry to your course	<input type="checkbox"/>
	2. Successful completion of your course	<input type="checkbox"/>
Preferred	3. Entry to your course	<input type="checkbox"/>
	4. Successful completion of your course	<input type="checkbox"/>

SECTION V

TIME ALLOCATION

In this section, you are asked to describe your course with regard to the time allocation. In the box to the right, please enter an approximate percentage of total class time you spend on each of your objectives. It can be estimated fairly easily for some activities, but we realize that it will be difficult for those which overlap; i.e., where some idea of literary history is gained through exercises also aimed at improving reading comprehension. For such complex activities, you should make the best estimate you can, rounding the figures off. Your entries should total 100%.

Purpose	Time Allocation
1. Grammar - basic morphology and syntax.	<input type="text"/>
2. Grammar - conjugation of all regular and auxiliary verbs.	<input type="text"/>
3. Grammar - common tenses and moods.	<input type="text"/>
4. Ability to apply grammar in writing and speaking.	<input type="text"/>
5. Ability to express ideas clearly and correctly in written French.	<input type="text"/>
6. Skill in translation - English to French.	<input type="text"/>
7. Skill in translation - French to English.	<input type="text"/>
8. Vocabulary - general.	<input type="text"/>
9. Vocabulary - idiomatic expressions.	<input type="text"/>
10. Vocabulary - Canadianisms.	<input type="text"/>
11. Reading comprehension.	<input type="text"/>
12. Aural comprehension.	<input type="text"/>
13. Fluency in spoken French.	<input type="text"/>
14. Literary history.	<input type="text"/>
15. Concepts of literary criticism.	<input type="text"/>
16. Vocabulary of literary criticism.	<input type="text"/>
17. Understanding of cultural differences and similarities.	<input type="text"/>
Other:	
18.	<input type="text"/>
19.	<input type="text"/>
20.	<input type="text"/>

HISTORY

We have divided the following section into two parts:

I. General Organization of Course

II. Specific Objectives

I. General Organization of Course

1. Indicate the main approach or approaches you use in Organizing your course.

1. thematic (e.g., nation-building, revolutions, great leaders)

1ST ☐

- 1.1 If you use a thematic approach, please indicate your main theme.

2ND ☐

(if more than one)

2. chronological

3. by period or era (e.g., Renaissance)

4. by country(ies)

5. by problems

6. other (please specify) _____

2. Estimate the proportion of your course devoted to each aspect of study. Place a percent (0 to 100) in the box to the right of each item. Your percentages should total 100.

1. social

--	--	--

2. economic

--	--	--

3. political

--	--	--

4. cultural

--	--	--

5. other (please specify) _____

--	--	--

3. Estimate the proportion of your course of study devoted to each country. Place a percent (0 to 100) in the box to the right of each item. Your percentages should total 100.

1. Canada

--	--	--	--

2. U.S.A.

--	--	--	--

3. Europe

--	--	--	--

4. Britain

--	--	--	--

5. other (please specify) _____

--	--	--	--

II. Specific Objectives

Respondents were asked to answer with respect to four main areas:

1. Research Skills

2. Writing Skills

3. Oral Skills

4. Analytic Skills

Description of Objectives Table, and Objectives Response Key, were identical with that in English IVB.

	ACTUAL		PREFERRED	
	1	2	3	4
Objective	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence To be Attained Given Preferred Level at Entry
<hr/>				
A. Research				
1. Use libraries effectively (card catalogues, reference materials, encyclopedias, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Locate historical references (archives, government records, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Make effective use of historical references.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Distinguish between primary and secondary sources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Writing				
1. Demonstrate facility in planning and organizing written materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Use clear, concise prose necessary for the written presentation of concepts (essays, reports).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Use effective note-taking techniques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Apply historical terminology appropriately (e.g., Renaissance).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Use appropriate conventions related to acknowledging references (e.g., footnotes, bibliography).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Oral				
1. Explain concepts clearly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Present an extended argument effectively.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Objective	ACTUAL		PREFERRED	
	1	2	3	4
	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence To be Attained Given Preferred Level at Entry
3. Present a prepared report.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Contribute effectively in a small group discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. <u>Analytic and Interpretive</u>				
1. Comprehend a variety of historical sources:				
1.1 documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 monographs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 texts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 other, please specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Analyze material read in terms of:				
2.1 identification of main thesis or argument	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 identification of significant/pertinent information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Present an argument effectively in terms of organization, substance, (supportive factual material) logical conclusions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Distinguish between essential and non-essential information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Distinguish between fact and interpretation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Demonstrate understanding of basic historical concepts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Compare and contrast various interpretations of historical events.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Identify bias.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Objective	ACTUAL		PREFERRED	
	1	2	3	4
	Level of Competence at Entry	Level of Competence Normally Attained	Preferred Level of Competence at Entry	Level of Competence to be Attained Given Preferred Level at Entry
9. Assess an argument in terms of available evidence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Define a historical problem by means of an assessment of appropriate information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Assess events in terms of their historical context.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Analyze the characteristics of a particular period, problem or theme in history.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Use historical concepts and information in order to understand contemporary issues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other:

PHYSICS

The vertical axis of the table which follows is arranged according to the possible course content of all physics courses in the interface. The course content has been organized according to topic in some detail under twenty-one major subject headings.

The horizontal axis of the table is arranged to gather information about your course as follows:

1. Allocation of Time

In the box beside the descriptive word or phrase for each major subject heading, enter the approximate number of instructional units (periods) of your total course which you allocate to topics within the heading. Indicate the length of time in minutes of your instructional unit/period: _____ minutes. Not all of the major subject headings will apply to your course and the way you present the material may not follow this breakdown. However, we would like you to do your best to indicate how the total time devoted to your course, including the scheduled laboratory periods, is shared among those major subject headings which do apply.

2. Level of Achievement at Entry

Your knowledge of the average level of preparation of incoming students has enabled you to teach your course without unnecessary overlap. This is the level we would like you to indicate in the column under the heading "Level of Achievement at Entry" for each topic covered in your course.

3. Level of Achievement Normally Attained

For every topic which you deal with in your course, we wish to obtain your estimate of the average level of achievement normally attained by students at the completion of your course. This level should be entered in the column under the heading "Achievement Level Attained" for each topic covered in your course.

4. Preferred Level of Achievement at Entry

You may feel that your course could be better taught if the average level of student achievement on entry were higher or lower than is the case now (as indicated by you under heading 2). Your preference could also be that incoming students remain "the same" with regard to achievement at entry. Make the appropriate response for each such topic covered in your course under the heading "Preferred Entrance Level."

5. Preferred Level of Achievement in Your Course

If you have made an entry in the column above indicating a preferred level of student achievement upon entry to your course, please indicate the level of student achievement which could then be attained in your course for each such topic under the heading "Preferred Level of Achievement."

If for some reason you do not wish to respond to an item, please place a diagonal line across the box.

Rating Scale for the Table

The following rating scale is to be used in the table to provide information about four aspects of your physics course as outlined on the previous page under headings 2,3,4, and 5.

0 - No Knowledge

No knowledge of the topic is assumed on entrance or the topic is not covered in this course.

1 - Descriptive

Students understand the topic in a purely descriptive manner. They are capable of a verbal description, including appropriate definitions, and have some general idea of where the topic fits in the overall subject.

2 - Introductory

Students understand relevant concepts regarding the topic including any theoretical treatment required. NO vector algebra or calculus is used or assumed. Students are able to provide descriptive answers to SIMPLE questions, and if appropriate, are able to do exercises requiring SIMPLE algebraic manipulations and/or SIMPLE graphical methods.

3 - Intermediate

Students understand relevant concepts regarding the topic. They can use SIMPLE vector algebra and INTRODUCTORY calculus if appropriate. Students are able to provide descriptive answers to questions, and if appropriate, to do NUMERICAL EXERCISES involving one or more of the following techniques: algebraic manipulation, vectors, and graphical methods.

4 - Advanced

Students understand relevant concepts regarding the topic. They can use vector algebra and calculus if appropriate. Students are able to discuss this topic in descriptive terms, and if appropriate, are able to SOLVE PROBLEMS stated in descriptive terms with or without numerical data included, using one or more of the following techniques: algebraic manipulation, vectors, calculus and graphic analysis.

To facilitate the completion of the table, you will be given a response-key card. Please use it to fill in the table.

MAJOR SUBJECT TOPICS	Time Allocation	Periods	Level of Achievement at Entry	Achievement Level Attained	Preferred Entrance Level	Level of Achievement in Your Course
1. Specific topic #1						
2. Specific topic #2						
etc.						

For each specific topic which you cover in your course, make an appropriate entry in Columns I and II above according to the rating scale below. If you feel that the achievement level of students should be different than it is now, indicate this in Column III and make an appropriate entry in Column IV that would occur as a result of a change in entry level of your students.

- Rating Scale:
- 0 - No Knowledge - no knowledge is assumed on entrance or the topic is not covered in the course.
 - 1 - Descriptive - purely descriptive understanding.
 - 2 - Elementary - Solve exercises and answer questions without the use of vectors or calculus.
 - 3 - Intermediate - use vectors and simple calculus with exercises and questions involving no calculus.
 - 4 - Advanced - use of vectors and calculus with exercises questions and problems.

If for some reason you do not wish to respond to an item (e.g., item does not apply to your course, you have some uncertainty about the response), place a diagonal line across the box.

TOPIC	1	2	3	4
	Level of Achievement at Entry	ACTUAL Achievement Level Attained	PREFERRED Entrance Level	Level of Achievement in your Co
1. MEASUREMENT				
Time Allocation <input type="checkbox"/> Periods				
1. Mass, length and time (fundamental quantities)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Errors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Accuracy and precision (significant figures, "rounding off")	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. SI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Development of relations relating physical quantities by dimensional analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Dimensional consistency of equations relating physical quantities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. FUNCTIONS				
Time Allocation <input type="checkbox"/> Periods				
Given a table of experimental data:				
1. Plotting and properly labelling a graph of the data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Writing the equation of a linear relation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Replotting a non-linear relation to obtain a straight line and writing the relation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Plotting a power law relation on log-log paper and writing the relation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Plotting an exponential relation on semi-log paper and writing the relation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. MOTION (Kinematics)				
Time Allocation <input type="checkbox"/> Periods				
1. Motion with constant acceleration in one, two, or three dimensions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Straight line kinematics with uniform acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Straight line kinematics with non-uniform acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Two-dimensional kinematics with uniform acceleration (e.g., projectile motion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Two-dimensional kinematics with non-uniform acceleration (e.g., circular motion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Three-dimensional kinematics with uniform acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Three-dimensional kinematics with non-uniform acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. NEWTON'S LAWS OF MOTION - DYNAMICS OF A PARTICLE				
Time Allocation <input type="checkbox"/> Periods				
1. Newton's first law, mass and inertia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Newton's second law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Newton's third law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Resolution and summation of forces by scale drawing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Resolution and summation of forces by analytical methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Frames of reference	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Pseudo forces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Dynamics of circular motion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4
ACTUAL		PREFERRED	
Level of Achievement at Entry	Achievement Level Attained	Preferred Entrance Level	Level of Achievement in your Course

TOPIC

STATICS Time Allocation ☐ Periods

1. Moments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Laws of equilibrium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Simple machines, the lever, the incline plane, pulleys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NEWTON'S LAWS OF MOTION - DYNAMICS OF A RIGID BODY

Time Allocation ☐ Periods

1. Translational motion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rotational motion, torque, moment of inertia, angular acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Combined translational and rotational motion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Friction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

GRAVITY - NEAR THE EARTH'S SURFACE

Time Allocation ☐ Periods

1. Distinction between gravitational and inertial mass; principle of equivalence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Weight and acceleration due to gravity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The dynamics of projectile motion (no air resistance)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The dynamics of projectile motion (air resistance)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Dependence of g on distance from centre of earth or on latitude	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

UNIVERSAL GRAVITATION

Time Allocation ☐ Periods

1. Ptolemy, Copernicus, Kepler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Kepler's Laws	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Universal law of gravitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Circular orbits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. General motion under a central force	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MOMENTUM

Time Allocation ☐ Periods

1. Impulse and momentum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Conservation of linear momentum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Elastic collisions (in one dimension)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Inelastic collisions (in one dimension)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Collisions of bodies in two dimensions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Angular momentum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Conservation of angular momentum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Precession	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TOPIC

1	2	3	4
ACTUAL		PREFERRED	
Level of Achievement at Entry	Achievement Level Attained	Preferred Entrance Level	Level of Achievement in your C

10. WORK, ENERGY AND POWER

Time Allocation ☐ Periods

1. Work done by a constant force	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Work done by a non-constant force (e.g., $F=kx$)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Work done by a non-constant force (e.g., $F=1/r^2$)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Work performed by compressing a gas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Kinetic energy and its relation to the work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Potential energy (constant force [e.g., mgh])	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Potential energy (non-constant force [e.g., $\frac{1}{2}kx^2$ or $\frac{Gm_1 m_2}{r}$])	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Conservation of mechanical energy (transformations between kinetic and potential energy)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Power	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Efficiency of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. VIBRATIONS AND WAVES Time Allocation ☐ Periods

1. Vibrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Kinematic description of SHM, ($y = A \sin \omega t$ or reference circle)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Motion under a harmonic force ($F = -kx$)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Solutions of the equation of motion for an oscillating system (Newton's second law)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Mass on a spring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Simple pendulum (in small angle approximation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Rigid pendulum (in small angle approximation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Torsional oscillations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Conservation of energy in undamped oscillations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Exponential decay of oscillations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Derivation of the differential wave equation for compressional waves in a gas or transverse waves on a string	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Relation between frequency, wavelength and velocity ($v = f\lambda$)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Waves propagated in one dimension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Waves propagated in two dimensions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Polarization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Doppler effect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Shock waves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Energy carried by a wave in one dimension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Relative and absolute intensity of sound waves (decibels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Energy radiated by a point source (inverse square law)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4
ACTUAL		PREFERRED	
Level of Achievement at Entry	Achievement Level Attained	Preferred Entrance Level	Level of Achievement in your Course

TOPIC

HOW LIGHT BEHAVES Time Allocation ☐ Periods

1. Qualitative discussion of light sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rectilinear propagation of light waves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Concept of a wave front	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Huygens' principle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Reflection of waves at a plane boundary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Reflection of waves at a spherical boundary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Convex and concave mirrors				
a) scale drawings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) analytical treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Refraction of waves at a plane interface between two media	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Concept of refractive index (Snell's Law)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Total internal reflection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Refraction by a prism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Prism spectrometer - minimum deviation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Dispersive power of a medium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Refraction at a spherical interface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The lensmaker's equation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The thin lens equation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Formation of images by lenses				
a) scale drawings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) analytical treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Power of a lens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Chromatic aberration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Monochromatic aberrations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. The eye and the camera	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Eye defects and corrective lenses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Simple and compound microscopes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. The telescope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TOPIC

1	2	3	4
ACTUAL		PREFERRED	
Level of Achievement at Entry	Achievement Level Attained	Preferred Entrance Level	Level of Achievement in your Course

13. INTERFERENCE AND DIFFRACTION

Time Allocation ☐ Periods

1. Superposition of pulses and/or waves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Reflection and transmission of pulses and waves at a boundary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Standing waves on a string, ends fixed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Standing waves in a pipe, both ends open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Standing waves in a pipe, one end open, one end closed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Interference of periodic waves, two point sources in a two-dimensional medium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Interference effects produced by a double slit (Young's double slit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Interference effects produced by a multiple slit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Fraunhofer diffraction by a straight edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Fraunhofer diffraction by a single slit (single slit interference)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Fraunhofer diffraction by a circular aperture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Fraunhofer diffraction by a grating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Rayleigh resolution criterion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Resolving power of a grating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Grating spectrometer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Fresnel diffraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Interference effects in parallel thin films	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Michelson interferometer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Interference effects in wedge-shaped thin films	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. ELECTRICITY AND MAGNETISM

Time Allocation ☐ Periods

1. Electrostatics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Electric force (Coulomb's Law)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Electric field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Electric potential energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Electric potential difference - volt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Sources of emf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Millikan experiment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Motion of a charge - ampere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Ohm's Law - constant resistance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Resistance of a conductor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4
ACTUAL		PREFERRED	
Level of Achievement at Entry	Achievement Level Attained	Preferred Entrance Level	Level of Achievement in your Co

TOPIC

16. NUCLEAR PHYSICS Time Allocation ☐ Periods

1. Radioactive decay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Alpha, beta and gamma radiation; properties and spectra	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Detection of radiation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Structure of the nucleus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Properties of nucleons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Nuclear reactions - general nature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Nuclear fission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Nuclear fusion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Radiation hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. TEMPERATURE AND HEAT Time Allocation ☐ Periods

1. Temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a) scales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) methods of measurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Thermal expansion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Heat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a) kinetic theory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Maxwellian velocity distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Conversion of mechanical to thermal energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) specific heat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Calorimetry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Gas laws	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Change of phase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Vapour pressure and humidity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Heat transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a) Convection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conduction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Radiation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Thermodynamics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a) First law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Second law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) The Carnot cycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4
ACTUAL		PREFERRED	
Level of Achievement at Entry	Achievement Level Attained	Preferred Entrance Level	Level of Achievement in your Course

TOPIC

PROPERTIES OF SOLIDS OTHER THAN THERMAL

Time Allocation ☐ Periods

1. Crystallographic properties of simple solids
2. Elastic properties, Hooke's law; moduli and compliances
3. Electronic properties; band structure; conductors; semi-conductors and insulators
4. Electronic properties, the diode
5. Electronic properties, the transistor

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FLUIDS AT REST AND IN MOTION

Time Allocation ☐ Periods

1. Density and specific gravity
2. Atmospheric pressure - the barometer
3. Hydrostatic pressure - Pascal's Law
4. Archimedes' principle - buoyancy
5. Surface tension and capillary action
6. Fluid flow, continuity conditions
7. Streamline flow
8. Bernoulli's Principle
9. Turbulent flow
10. Viscosity
11. Poiseuille's Law

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SPECIAL THEORY OF RELATIVITY

Time Allocation ☐ Periods

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

PROPERTIES OF ELEMENTARY PARTICLES (other than proton, neutron or electron)

Time Allocation ☐ Periods

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

OTHER TOPICS (please list and respond appropriately)

Time Allocation ☐ Periods

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MATHEMATICAL SKILLS

Because mathematics is the language of physics, it is necessary for students to have certain mathematical skills. Using the following scale, indicate in the box at the right of each skill listed below, whether your students are expected to have this skill and whether your expectations are fulfilled.

RESPONSE KEY

- 0 - Students are not expected to have this skill.
- 1 - Students are expected to have this skill, but most are not competent.
- 2 - Students are expected to have this skill, and most are competent.

Mathematical Skills
of Entering Students

- | | |
|---|--------------------------|
| 1. Ability to use concepts of ratio and proportion. | <input type="checkbox"/> |
| 2. Use of logarithms. | <input type="checkbox"/> |
| 3. Use of exponential functions. | <input type="checkbox"/> |
| 4. Ability to convert degrees to radians. | <input type="checkbox"/> |
| 5. Use of trigonometric functions. | <input type="checkbox"/> |
| 6. Use of trigonometric identities. | <input type="checkbox"/> |
| 7. Manipulation of linear equations. | <input type="checkbox"/> |
| 8. Ability to solve simultaneous linear equations. | <input type="checkbox"/> |
| 9. Ability to find the roots of a quadratic equation. | <input type="checkbox"/> |
| 10. Ability to differentiate simple functions. | <input type="checkbox"/> |
| 11. Ability to integrate simple functions. | <input type="checkbox"/> |
| 12. Ability to manipulate vectors. | <input type="checkbox"/> |
| 13. Facility with vector algebra. | <input type="checkbox"/> |
| 14. Ability to apply the binomial expansion. | <input type="checkbox"/> |

MATHEMATICS: SECONDARY SCHOOL AND COMMUNITY COLLEGE

Table II which follows contains a comprehensive list of topics treated in the Secondary School and Community College mathematics courses identified for inclusion in this project. These courses are:

1. Secondary School - Applications of Mathematics 2
Foundations of Mathematics 2
2. Community College - in most cases, mathematics courses normally taught in the first semester of the Business and Technology Divisions.

Please glance over Table II to get a general impression of its content and format and then continue reading this introduction.

You will have noticed that there are one hundred and forty-five topical items in the table. These have been arranged in eleven sections as indicated below to help you in responding and also to make analysis of your responses easier.

SECTION	TITLE	NO. OF ITEMS
I	BASIC ARITHMETIC	12
II	BUSINESS ARITHMETIC	12
III	BASIC ALGEBRA	22
IV	QUADRATIC FUNCTIONS AND EQUATIONS	12
V	EXPONENTIAL AND LOGARITHMIC FUNCTIONS	14
VI	SEQUENCES AND SERIES	5
VII	ANALYTIC GEOMETRY AND VECTORS	15
VIII	SYNTHETIC GEOMETRY	10
IX	TRIGONOMETRY, COMPLEX NUMBERS AND STATICS	18
X	CALCULUS	15
XI	STATISTICS AND PROBABILITY	10

Since your concern in reporting is with one (or perhaps two) particular courses and any prerequisite content, you should not need to respond to all, or even a large majority of the items.

You will also have noticed that you have to make entries in 5 columns:

1. Amount of class time allocated to a topic
2. Average level of competence at entry
3. Average level of competence on exit
4. Preferred average level of competence at entry
5. Preferred average level of competence on exit

You should consider column 1 first, then columns 2 and 3 together and finally columns 4 and 5 together. Our experience suggest that answering the 5 columns takes about 2 hours on the average. Before you begin, please read the notes below which outline the basis on which you should make your response.

1. Allocation of Class Time

If you teach at secondary school level, you probably plan a topic so that you cover it in a certain number of periods. If you teach in a community college, your unit for topic coverage will probably be an hour. First choose whichever unit (period or hour) you find easier to use and complete the following items:

Total number of class periods/hours

Number of periods/hours spent in
review of work in earlier courses

Now check the box at the top of column one at the beginning of Table II, and, in the cell beside each topic you actually teach, enter the appropriate numeral. Please make sure that the total number of periods or hours you allocate corresponds approximately to the total in the course, exclusive of testing time, but inclusive of review.

2, 3. Current levels of Competence at Entry and Exit

The second column requires you to estimate the average level of competence of students at entry to your course. In the third column we ask you to estimate the average level of competence normally attained by students at the end of your course. By comparing columns 2 and 3 we can estimate what is normally taught in your course. Since the interface covers a 2-year period of schooling, and the topic may have already been taught prior to the interface, we are very concerned that the responses which instructors on both sides of the interface give are based on the same scale, and are consistent in their meaning.

We have, therefore, chosen a six-point response scale on the following basis, with the competence of the average student in mind.

LEVEL OF RESPONSE	AVERAGE LEVEL OF COMPETENCE OF STUDENTS
-------------------------	--

0	Has no knowledge of this topic
1	Has an awareness and descriptive knowledge of the topic only; has no ability to apply it.
2	Has elementary knowledge and skill, based on a simple quantitative introduction; can do simple examples and problems only.
3	Has a working grasp of the topic, and is able to do standard exercises and problems; has some facility in translating problems into mathematical terms, and in knowing the place of the topic in a wider context.

LEVEL OF RESPONSE	AVERAGE LEVEL OF COMPETENCE OF STUDENTS
-------------------------	--

4	Has a thorough understanding of the topic and its place in mathematics, can solve a wide range of problems, prove theorems, generalise and give examples.
5	Has complete mastery of the topic; underlying concepts are part of his mathematical background and he can apply them to solve non-routine, symbolic, verbal, or real-life problems. He understands the theoretical basis of the topic and its limitations of applicability.

Condensed into brief descriptive phrases, the response scale reads:

LEVEL	AVERAGE COMPETENCE
0	No knowledge
1	Descriptive knowledge only
2	Elementary quantitative knowledge and skill: simple applications only
3	Working grasp: able to do standard exercises and problems
4	Thorough understanding: can solve a wide range of problems, and generalise
5	Complete mastery: understands theoretical base, and limitations of applicability, can solve non-routine problems of all types

In assigning each level of response, please keep in mind the wide range between "no knowledge" and "complete mastery."

4. 5. Preferred Levels of Competence at Entry and Exit

The final two columns have been included so that you as an instructor of this course can indicate 1) the average level of competence which you would prefer students to have in each relevant topic when they enter your course and 2) the average level of competence you would expect students to attain in this topic at the end of the course on this basis of entry.

You may wish to use your responses to columns 2 and 3 as reference points, so that your final responses are consistent with them. Normally, you will enter responses only for the topics you responded to already in columns 2 and 3. However, please feel free to respond to topics other than those in your course if you feel it important to do so. Please respond in terms of the same response code you have already used for columns 2 and 3, and use the separate card for easy reference.

A Few Final Comments

There may be topics relevant to your course which are not on the total list. If so, please add them at the end of the list and respond to them.

As previously noted, do not hesitate to use your course outlines, student assignments, texts, and any other resources that might help you with your responses.

Finally, in the comment space, we will welcome any additional information which you think would be helpful in assessing all the courses in this interface group, e.g., the amount of time you spend digressing or the general level of abstraction at which you teach this course.

Thank you for your time, effort and patience.

TABLE II

MATHEMATICS CONTENT MATRIX

FOR SECONDARY SCHOOL - C.A.A.T. INTERFACE

711

1	2	3	4	5
Amount of Class Time Allocated period <input type="checkbox"/> hour <input type="checkbox"/>	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

BASIC ARITHMETIC

1. Fundamental arithmetic operations with fractions, decimals and integers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Commutative, associative and distributive properties applied to these operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Percentage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Simple and compound interest.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Measurement: use of exact and approximate numbers (error, precision, accuracy, rounding off).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Scientific notation: conversion to and from.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Scientific notation: use in computation and estimation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Metric system: traditional units and uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Metric system - S.I.U.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Pictorial representation of data (bar, line, directed number graphs, histograms, pie charts).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Fundamental operations with integers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Real numbers (rationals, irrationals, recurring and non-recurring decimals, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BUSINESS ARITHMETIC

1. Home ownership.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Municipal Taxation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Foreign exchange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Equations of equivalence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Ordinary annuities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Annuities due and deferred.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Stocks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

8. Sinking funds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Customs duties and excise taxes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Bonds and debentures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Income tax.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Break-even analysis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

III BASIC ALGEBRA

1. Generalized arithmetic: literal notation, idea of variable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Manipulating, simplifying and evaluating algebraic expressions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Linear equations and word problems involving one unknown.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Systems of linear equations in 2 unknowns and applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Systems of linear equations in 3 unknowns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Solution of linear equations using determinants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Solution of linear equations using matrices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Linear inequalities and graphical solution of linear programming problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Factoring: various types, complex fractions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Operations with rational algebraic fractions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Solution of simple rational equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Operations with radicals and irrationals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Solution of radical and irrational equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Four fundamental operations on polynomials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Manipulation, rearrangement, evaluation of algebraic formulae.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Dimensional analysis: use with formulae and prefixes (e.g., kilo, micro).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Concept of relation: classes, graphing, inverse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

18. Concept of function: notation and evaluation of functional values.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Composition and combinations of functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Ratio and proportion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Variation (direct, inverse, joint), applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Binomial Theorem: r^{th} term, applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QUADRATIC FUNCTIONS AND EQUATIONS

1. Quadratic function and its properties: parabola, graph, symmetry, intercepts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Inverse of the quadratic function.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Maxima and minima problems: graphical, algebraic solutions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Applications: absolute value, reciprocal, regions, point mappings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Higher degree polynomials: graphs, use of factor theorem and factoring.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Translations of the plane.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Quadratic equations: completing the square, formula, problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Linear-quadratic systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Quadratic inequalities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Applications: non-real roots, related equations such as $\sqrt{4-3x} - x = 12$.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Theory of quadratic equations: nature of roots, discriminant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Theory of quadratic equations: sum and product of roots, applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EXPONENTIAL AND LOGARITHMIC FUNCTIONS

1. Exponents: whole numbers, integers, rationals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Graphs of common exponential functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

3. Definition of e^x , a^x , and Laws of exponents.
4. Exponential equations.
5. Use of exponential tables.
6. Logarithm: definition, relation to exponential.
7. Laws of logarithms.
8. Computations with logarithms.
9. Natural logarithms.
10. Logarithmic equations.
11. Discussion and graphing of exponential and logarithmic functions, semi-logs.
12. Applications in business and/or technology (growth and decay)
13. Operation and use of slide rule.
14. Operation and use of calculators.
- 15.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VI SEQUENCES AND SERIES

1. Sequences: definitions, general term, graphs, limits.
2. Applications: A.P., G.P., Fibonacci
3. Series: definitions, notation, first n terms.
4. Formulae: A.P., G.P., convergent geometric.
5. Mathematical induction.
- 6.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VII ANALYTIC GEOMETRY AND VECTORS

1. Idea of locus, applications.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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The Straight Line

2. Derivation of various forms of the equation: two points, slope and point, intercepts, etc.
3. Identifying, constructing and graphing a straight line from given data.
4. Use of experimental data to obtain best straight line, interpolation.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

5. Cartesian 3-space and applications.

☐ ☐ ☐ ☐ ☐
Circle and Sphere

6. Equation of circle and basic properties (symmetry, chords, intersection).

☐ ☐ ☐ ☐ ☐

7. Tangents to a circle, a sphere, applications.

☐ ☐ ☐ ☐ ☐
Parabola, Ellipse and Hyperbola

8. Conic sections in the environment.

☐ ☐ ☐ ☐ ☐

9. Construction techniques, curve stitching; basic vocabulary.

☐ ☐ ☐ ☐ ☐

10. Definitions, equations in standard positions and forms, properties, problems.

☐ ☐ ☐ ☐ ☐

11. Linear-quadratic systems of equations.

☐ ☐ ☐ ☐ ☐

12. Problems and applications.

☐ ☐ ☐ ☐ ☐

13. Use of transformations.

☐ ☐ ☐ ☐ ☐
Vectors in 3-Space

14. Coordinates, ordered triples, models, equal vectors.

☐ ☐ ☐ ☐ ☐

15. Addition, scalar multiplication, problems.

☐ ☐ ☐ ☐ ☐

16.

☐ ☐ ☐ ☐ ☐
SYNTHETIC GEOMETRY

1. Idea of locus, applications.

☐ ☐ ☐ ☐ ☐

2. Circle: definition, basic terminology and formulae.

☐ ☐ ☐ ☐ ☐

3. Circle: chord, angle, secant, tangent properties.

☐ ☐ ☐ ☐ ☐

4. Sphere: definition, formulae, properties.

☐ ☐ ☐ ☐ ☐

5. Applications of vectors, transformations to loci, circle and sphere.

☐ ☐ ☐ ☐ ☐

6. Famous problems of geometry: nine-point circle, etc.

☐ ☐ ☐ ☐ ☐

7. Similar figures in 2- and 3-space.

☐ ☐ ☐ ☐ ☐

8. Applications of similar figures: mean proportional theorem, etc.

☐ ☐ ☐ ☐ ☐

9. Solid geometry: mensuration.

☐ ☐ ☐ ☐ ☐

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

10. Geometries: Euclidean and other.

11.

IX TRIGONOMETRY, COMPLEX NUMBERS AND STATICSTrigonometry

1. Primary and reciprocal trigonometric functions (definitions, graphs, properties).
2. Basic identities and expansions.
3. Radian measure.
4. Amplitude, periodicity, phase shift, and graphing.
5. Solution of equations.
6. Inverses of trigonometric functions.
7. Applications of linear transformations.
8. Laws of sines and cosines.
9. Solution of right triangle.
10. Solution of oblique triangle.
11. Polar coordinates.

Complex numbers

12. In rectangular form $(x + iy)$.
13. In polar form $[(r, \theta)$ or $r(\cos \theta + i \sin \theta)]$.
14. In exponential form $(re^{i\theta})$.
15. Applications: A.C. circuits, etc.

Statics

16. Moments of forces.
17. Centres of gravity.
18. Friction.
- 19.

X CALCULUS

1. Limits.
2. Δ - Process and slope.
3. Derivatives of polynomials.
4. Derivatives of algebraic expressions, requiring application of product, quotient or power rules.

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

5. Applications of differentiation: maxima and minima problems, curve sketching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Applications of differentiation: geometry, related rates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Derivatives of transcendental (trig, exp, log) functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Applications involving transcendental functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Differentials and inverse differentiation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Approximate integration (Trapezoidal rule).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Indefinite integral, Fundamental Theorem of calculus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Definite integral, area under a curve.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Indefinite integrals and their evaluation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Other applications (specify).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Integration formulae: power, log, exp, trig, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

STATISTICS AND PROBABILITY

1. Statistics: uses, data gathering, representation and interpretation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Descriptive statistics: mean, median, mode, standard deviation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Applications: in daily lives, industrial quality control (testing, sampling).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Use of counting techniques: permutations, combinations, tree diagrams.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Empirical and a priori probability with real life and experimental (e.g., coin-tossing) examples.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Law of large numbers, implications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Basic rules of probability: simple, compound, independent events.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Concept of probability distribution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Applications: Mendelian genetics, solution of problems using mathematical expectation, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

10. Bayes Theorem.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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11.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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COMMENTS:

MATHEMATICS: SECONDARY SCHOOL AND UNIVERSITY

The description of topics treated differs from that presented for the secondary school/community college interface, and is reproduced below.

Table II which follows is a comprehensive list of topics treated in the Secondary School and University mathematics courses identified for inclusion in this project. These courses are:

1. Secondary School
 - (Honours Graduation Level) - Relations and Functions
 - Calculus
 - Algebra
2. University
 - Major first-year courses in Arts and Engineering
i.e., Calculus
Foundations, General Algebra
Linear Algebra
Probability and Statistics

Please glance over Table II to get a general impression of its content and format, and then continue reading this introduction.

You will have noticed that there are some two hundred and thirty-nine topical items in the table. These have been arranged in seven sections in the order indicated below to help you in responding and to make analysis of your responses easier.

SECTION	TITLE	NO. OF ITEMS
I	RELATIONS AND FUNCTIONS (Grade 13)	17
II	CALCULUS (Grade 13 and University)	64
III	ALGEBRA (Grade 13)	22
IV	SOME COMMON TOPICS (Grade 13)	21
V	FOUNDATIONS, GENERAL ALGEBRA (University)	45
VI	LINEAR ALGEBRA (University)	33
VII	PROBABILITY AND STATISTICS (Grade 13 and University)	37

The instructions to the respondent and the Objective Rating Scale are identical with the instructions given in the Secondary School/Community College questionnaire. They are, therefore, not repeated here.

TABLE II

MATHEMATICS CONTENT MATRIX

FOR SECONDARY SCHOOL - UNIVERSITY INTERFACE

720

Topic

1	2	3	4	5
Amount of Class Time Allocated period <input type="checkbox"/> hour <input type="checkbox"/>	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

I RELATIONS AND FUNCTIONS (Grade 13)

1. Function as a mapping.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Inverse of a function.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Graphs and properties of second degree relations using previously known skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Equations and graphs of conics using focus-directrix definitions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Equations of conics in non-standard positions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Intersections of lines and conics; e.g., tangents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Intersection of conics and conics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Domain, range, and graph of basic trigonometric functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Standard trigonometric formulae and applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Trigonometric identity problems and equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Phase shift, period, and amplitude.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Translations of the plane.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Rotations of the plane.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Reflections of the plane.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Study of general conic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

II CALCULUS -
Elementary Approach Topics 1-15
Advanced Approach Topics 16-64

1. Limit of a function: intuitive approach via sequences and series.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rate of change: slopes, secants, tangents.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Derivatives of powers, products, and quotients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Other derivatives: function of a function, trig functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Applications of derivatives to tangents to curves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

6. Further applications: velocity, acceleration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Second derivative and its use, curve-tracing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Maxima and minima problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Rate of change problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Differential equations; anti-derivatives applied to curves and motion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Areas between curves and axes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Areas enclosed between curves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Volumes of rotation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Integration using numerical methods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Applications involving complex numbers and/or polar coordinates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The real numbers: axioms, least upper bound, completeness.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Proof by induction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Inequalities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Notation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Motivation, historical introduction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Definition and algebra of limits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Functions: definition, algebra, composition, inverse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Continuity: definition, algebra of continuous functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Theorems on continuous functions</u>					
24. Intermediate value.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Extreme value.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Derivatives</u>					
26. Definition and algebra of derivatives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Chain rule.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Derivatives of elementary functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Theorems on differentiation</u>					
29. Rolle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Mean value.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Topic

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Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Applications of differentiation

31. Related rates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Optimization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Graph sketching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Scientific examples.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. l'Hôpital's Rule to limits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Integration

36. Definition of integral and algebraic integration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Fundamental Theorem of calculus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Mean value theorem (MVT).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Application of MVT to approximation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Techniques of integration

40. Substitution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Trigonometric substitution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Parts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Partial fractions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applications of integration

44. Area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Volume.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Arc length	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Improper integrals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Taylor's theorem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Logarithmic and exponential functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Hyperbolic function.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sequences and series

52. Definition and algebra of limits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Absolute convergence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Conditional convergence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. Basic convergence tests (e.g., ratio, root, integral, monotone).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. Power series.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Elementary differential equations

57. Separation of variables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58. General linear first order.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Topic

9. Partial derivatives.
 10. Gradient.
 11. Multiple integration.
 12. Parametric curves.
 13. Curvature.
 14. Mathematical Modelling
 15.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ALGEBRA (Grade 13)Sets, subsets

1. Definition and laws of combinations.
 2. Fundamental counting principles.
 3. Permutations.
 4. Combinations.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mathematical induction

5. Method; use with properties of
sigma notation.
 6. Applications and counterexamples.
 7. Binomial Theorem.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Vectors

8. Definition and properties.
 9. Geometric uses.
 10. Vectors as ordered pairs, ordered
triplets.
 11. Linear combinations of vectors.
 12. Definition, formulae and algebraic
properties of dot product.
 13. Projections, unit vectors,
applications to physics.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Equations of lines

14. Vector and linear equations in
2-space.
 15. Vector and parametric equations in
3-space.
 16. Direction angles, cosines, and
numbers.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Equations of planes

17. Vector, parametric, and linear
equations in 3-space.
 18. Solution sets of 2 or 3 linear
equations.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Topic

Systems of linear equations

19. m equations in n unknowns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Augmented matrix; row reduced echelon form.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Solutions in parametric form.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Consistency and inconsistency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IV SOME COMMON TOPICS (Grade 13)

Matrices and linear transformations

1. Matrices: definitions, equations, properties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Linear transformations: examples, dot product, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Linear transformations: properties, A^{-1} , non-invertible matrices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Groups, Rings and Fields

4. Definition; study and uses of typical groups, e.g. symmetry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Number systems and sets of functions as groups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Permutations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Group properties of 2×2 matrices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Transformations of a regular tetrahedron and cube.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Characteristic properties and examples of rings and fields.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Complex Numbers

10. Definitions and field properties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Solutions of quadratic equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Geometric and polar forms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. De Moivre's theorem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Polar Coordinates

14. Correspondence and conversion between rectangular, polar, and vector descriptions of point P.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Graphing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Topic

Logical Reasoning

16. Statements, sentences, three basic connectives.
17. Logical connectives and quantifiers and use in proof and disproof.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mathematics of Investment

18. Compound interest and annuities.
19. Present value.
20. Instalment buying and mortgages.
21. Bonds.
- 22.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FOUNDATIONS, GENERAL ALGEBRA (University)Number theory

1. Peano postulates.
2. Mathematical induction.
3. Divisibility: primes, g.c.d., Euclidean Algorithm.
4. Congruences.
5. Diophantine equations.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Number systems

6. Rationals.
7. Reals.
8. Complex numbers: polar form, Argand diagram.
9. Cardinality.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Polynomials

10. Factorization.
11. Roots: multiple, simple, coefficients.
12. Rational functions.
13. Partial fractions.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Groups

14. Axioms.
15. Cyclic Groups.
16. Permutations.
17. Transformation groups.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Topic

18. Groups of isometries of figures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Subgroups and cosets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Homomorphisms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Normal subgroups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Factor groups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Other topics (specify).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rings and integral domains

24. Axioms.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Ideals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Examples: \mathbb{Z} , polynomials, matrices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fields

27. \mathbb{Q}, \mathbb{R} .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Ordered field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Finite field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Partial ordering

31. Boolean algebra.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Applications of Boolean algebra.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Partially ordered sets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Lattices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Graph theory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Combinations

36. Sets, subsets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Partitions, combinations and permutations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Generating function.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Binomial, multinomial theorem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Finite differences and summation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Difference equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Probability.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Inequalities

43. Arithmetical and geometric means.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Cauchy-Schwartz.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. General approach.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Topic

LINEAR ALGEBRA

1. Discussion of two- and three-dimensional spaces.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Linear combinations and linear independence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Spanning set, basis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Dimension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Subspace.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Linear operators

6. Algebra of linear operators.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Matrix representation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Change of coordinates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Row echelon form of matrix.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Systems of linear equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Determinants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Cramer's method.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Eigenvalues and eigenvectors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Jordan canonical form.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Dual spaces, linear functions, dual of an operator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Bilinear and quadratic forms

16. Diagonalization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Signature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Inner product spaces: basic properties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Cross-product.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Symmetric operator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Orthogonal operator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Principal axes theorem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Linear inequalities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Linear programming.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Games.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applications of linear algebra

26. Geometry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Markov processes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Electric circuits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Vibration problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

Numerical topics

30. Solution of linear systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Matrix inversion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Iterative solution of equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Ill-conditioning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VII PROBABILITY AND STATISTICS

1. Simple data collection and representation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Grouped data, histograms, frequency polygons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Measures of central tendency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Measures of dispersion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Exploratory data analysis: fits and residuals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Sample spaces and events.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Probability of an event.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Complementary and mutually exclusive events.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Conditional probability and independence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Discrete random variables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Continuous random variables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Mathematical expectation and variance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Binomial distribution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Poisson distribution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Normal distribution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Sampling distributions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Central limit theorem.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Tests and confidence intervals for proportions (1- and 2-sample cases)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Tests and confidence intervals for mean (1-sample, 2-sample, equal variances).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Comparing two means (variances, unknown and unequal).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Inferences about variances of normal populations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Type I and Type II errors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Bayesian inference.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Amount of Class Time Allocated	Level of Competence			
	ACTUAL		PREFERRED	
	Average Level at Entry	Average Level on Exit	Average Level at Entry	Average Level on Exit

Topic

24. Fiducial and structural inference.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Direct likelihood inference.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Decision theory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Chi-square and contingency tables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Nonparametric tests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Confidence intervals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Regression and correlation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Experimental design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Analysis of variance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Survey sampling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Quality control.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Use of random number tables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Use of real data sets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Use of computer in statistical problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS.

If you think that this questionnaire has not allowed you to describe your course or comment adequately, please feel free to do so in the space below.

Thank you for your cooperation.

Notes for Section IV

1. Secondary School English 4 and CAAT only
2. Secondary School English and University only
3. Or (years) and universities (year 1)

ENQUETE SUR L'ENSEIGNEMENT SECONDAIRE ET POST-SECONDAIRE

QUESTIONNAIRE SUR LES DESCRIPTIONS DE COURS

Le présent questionnaire fait partie d'une vaste enquête portant sur les rapports qui existent entre les différents cours donnés dans sept disciplines distinctes aux niveaux secondaire et post-secondaire. Le Ministère des collèges et universités ainsi que le Ministère l'éducation ont confié à une équipe de travail de l'université Queen's et du Collège Saint-Laurent cette étape d'une enquête en trois parties. Ce questionnaire a été mis au point grâce à la collaboration de professeurs enseignant aux niveaux des écoles secondaires, des collèges communautaires et des universités.

Grâce à un système de sélection s'appuyant sur des nombres au hasard, vous avez été choisi parmi d'autres enseignants pour remplir ce questionnaire en rapport avec un cours précis que vous donnez. Les réponses resteront anonymes; on n'utilisera pas les données accumulées pour l'appréciation d'individus ou d'établissements.

Le questionnaire se divise en quatre [cinq] parties:

- I. Antécédents du professeur
- II. Conception, préparation et enseignement du cours
- III. Buts et objectifs du cours
- IV. Contenu du cours et niveau de compétence de l'élève
- ¹V. Distribution du temps

Une fois complété, le questionnaire devrait fournir une image assez fidèle du cours désigné en bas de page, de même que vos idées sur ce que vous souhaiteriez que vos étudiants aient assimilé soit avant, soit après le cours.

N'hésitez pas à utiliser vos profils de cours, travaux d'étudiants, textes ou toute autre source d'information susceptible de vous aider à répondre à ce questionnaire.

Nous vous remercions d'avance pour votre collaboration.

¹Français only

PREMIERE PARTIEANTECEDENTS DU PROFESSEUR

A la plupart des items, répondez en plaçant le numéro de la réponse que vous jugez appropriée dans la case qui se trouve à droite de la question. Dans le cas d'items nécessitant des réponses plus détaillées, un espace est prévu en conséquence.

Depuis combien de temps enseignez-vous au niveau secondaire?¹ (y compris l'année en cours)

--	--

Depuis combien d'années donnez-vous ce cours ou son équivalent? (y compris l'année en cours)

--	--

² Ce cours a-t-il un lien quelconque avec votre domaine de spécialisation?

1. oui, il s'inscrit dans mon domaine de spécialisation
2. oui, il s'y rattache indirectement
3. non.

--

Avez-vous enseigné à un autre niveau?

1. non
2. élémentaire
3. collégial
4. universitaire
5. autre niveau (précisez, s.v.p.) _____
6. plus d'un niveau (précisez, s.v.p.) _____

--

Si vous avez répondu 2 3 4 5 ou 6 à l'item précédent, combien d'années, au total, avez-vous enseigné aux autres niveaux?

--	--

Quel est votre diplôme le plus élevé?

1. doctorat
2. maîtrise
3. baccalauréat spécialisé
4. baccalauréat général
5. certificat post-secondaire
6. autre diplôme (précisez s.v.p.) _____

--

Combien d'années d'expérience professionnelle connexe, hormis l'enseignement, avez-vous accumulées?

--	--

³ A quelle catégorie de l'OSSTF ou de l'AEFO appartenez-vous?

1. Catégorie 1 (OSSTF) ou catégorie A1 (AEFO)
2. Catégorie 2 (OSSTF) ou catégorie A2 (AEFO)
3. Catégorie 3 (OSSTF) ou catégorie A3 (AEFO)
4. Catégorie 4 (OSSTF) ou catégorie A4 (AEFO)

☐

³ Quel poste occupez-vous à votre école?

1. directeur
2. directeur adjoint
3. chef de département
4. chef adjoint
5. professeur
6. autre poste (précisez, s.v.p.) _____

☐

⁴ Quel est présentement votre rang?

1. professeur
2. instructeur
3. autre (précisez, s.v.p.) _____

☐

⁵ Quel est présentement votre rang?

1. professeur titulaire
2. professeur agrégé
3. professeur adjoint
4. chargé de cours
5. autre (précisez, s.v.p.) _____

☐

1. Or CAAT or university
2. Omitted in university
3. Secondary school only
4. CAATs only
5. University only

Dans cette partie, nous aimerions obtenir des renseignements détaillés sur la conception et la préparation du cours, le contrôle des connaissances, le matériel ainsi que les méthodes d'enseignement. Si les diverses possibilités que nous proposons sont insuffisantes, n'hésitez pas à en ajouter, le cas échéant.

Indiquez si les facteurs suivants vous ont influencé dans l'enseignement du cours:

CODE - 0 - pas du tout

1 - un peu

2 - modérément

3 - beaucoup

9 - item non-pertinent

intérêts des étudiants ☐

connaissance du sujet par les étudiants ☐

rapport entre ce cours et d'autres cours suivis en même temps par les étudiants ☐

renseignements dont vous disposez sur les choix de cours, de programmes, d'orientation d'études que font la plupart des étudiants après avoir réussi à votre cours ☐

programme-cadre du Ministère de l'éducation de l'Ontario ☐

directives qui vous ont été données (e.g. par le directeur de programme, le comité de planification académique) ☐

votre propre intérêt pour la matière enseignée et/ou votre formation ☐

contenu et orientation du (des) manuel(s) de base corps enseignant (précisez, s.v.p.) ☐

autres facteurs (précisez, s.v.p.) ☐

Existe-t-il des cours pré-requis (recommandés au niveau secondaire) pour l'admission à ce cours?

1. oui

2. non ☐

Si vous avez répondu "oui" à la question précédente, donnez la cote et le titre du (des) cours pré-requis. A défaut de cours, décrivez brièvement l'expérience, les connaissances et la formation pré-requis.

Dans certaines parties de ce questionnaire, on vous demande de considérer les étudiants en tant que groupe. Il peut toutefois y avoir des différences importantes entre les étudiants sur le plan individuel, en raison des aptitudes particulières de chacun. En général, quelle est l'importance de l'écart qui différencie les étudiants au début de votre cours?

1. impossible d'en juger
2. écart négligeable
3. écart acceptable
4. écart important

☐

Dans quels domaines (connaissance générales, aptitudes, attitudes) remarquez-vous l'écart le plus important?

D'après-vous, est-ce que les étudiants étaient bien préparés à suivre votre cours?

1. non, pas suffisamment
2. oui, bien
3. oui, assez bien
4. oui, très bien

☐

Dans quels domaines (connaissances générales, aptitudes, attitudes) pensez-vous que les étudiants ont été bien préparés?

Dans quels domaines (connaissances générales, aptitudes, attitudes) pensez-vous que les étudiants auraient pu être mieux préparés?

FOR FRANCAIS, HISTOIRE, MATHEMATIQUE ONLY

Vous trouverez ci-après diverses techniques d'enseignement. Répondez à cette question en vous référant uniquement au TEMPS PASSE EN CLASSE.

- DIRECTIVES: A. Commencez par éliminer les techniques que vous n'avez pas utilisées cette année dans votre cours en inscrivant zéro dans la case de droite.
- B. Inscrivez dans la case de droite le pourcentage approximatif du temps consacré à chacune des autres techniques que vous avez utilisées cette année dans votre cours. Servez-vous du papier mis à votre disposition pour faire vos calculs car vous devez arriver à un total de 100%.

cours magistral (suivi ou non d'une discussion)

--	--

"maïeutique" (méthode suscitant la réflexion au moyen de questions appropriées)

--	--

² travail en petites groups (sous la surveillance du professeur)

--	--

³ travaux pratiques - ordinateurs, travaux de laboratoire, expériences

--	--

séminaire (travail d'un seul groupe dirigé ou non par un professeur; cette technique peut comprendre des exposés d'étudiants)

--	--

travail individuel (les étudiants font en classe le travail requis pour le cours et reçoivent, au besoin, une aide supplémentaire du professeur; vous pouvez inclure ici le travail à la bibliothèque ou au centre de documentation).

--	--

enseignement individualisé (chaque étudiant travaille à son propre rythme; par exemple, enseignement programmé, modules d'apprentissage)

--	--

² jeux, simulations

--	--

⁴ travail de laboratoire

--	--

² exposés d'étudiants (hors du cadre d'un séminaire)

--	--

tests

--	--

⁴ dictées (tests exclus)

--	--

⁴ exercices de traduction (tests exclus)

--	--

² recherches à la bibliothèque (avec le professeur, en vue de travaux pour la classe et non d'un travail individuel)

--	--

techniques audio-visuelles (télévision, magnétophone, cinéma, radio, etc.)

--	--

excursions, rencontres avec des personnes invitées

--	--

⁴ présentations théâtrales (pièces, extraits de pièces, jeux de scène, etc.)

--	--

autres techniques (précisez en ajoutant des case au besoin)

1	0	0
---	---	---

Translations of the descriptions of teaching methods differed considerably in the Physique questionnaire. The format for Physique is accordingly reproduced in full below.

La liste ci-dessous identifie diverses techniques d'enseignement. Veuillez tenir compte de toutes les heures-contact en classe et au laboratoire lorsque vous répondrez à la question suivante.

1. Indiquez zéro 0 dans la case correspondant aux techniques que vous N'AVEZ PAS UTILISEES cette année pour enseigner ce cours.
2. Indiquez le pourcentage approximatif des heures-contact au cours desquelles vous AVEZ UTILISE chacune des techniques mentionnées durant l'année pour enseigner ce cours.
3. Autant que possible, la somme des pourcentages devrait être de 100.

cours magistral (avec ou sans questions des étudiants)	<input type="text"/>
leçon socratique (questions-réponses, interactions entre l'enseignant et les étudiants)	<input type="text"/>
démonstrations	<input type="text"/>
travaux en laboratoire, expériences	<input type="text"/>
étude en classe (les étudiants sont libres de compléter des travaux assignés durant l'heure-contact; ils peuvent donc se faire aider par l'enseignant. Ceci inclut de tels travaux faits à la bibliothèque ou au centre de documentation)	<input type="text"/>
enseignement individualisé (chaque étudiant progresse à son propre rythme; e.g. l'enseignement séquentiel, l'apprentissage modulaire)	<input type="text"/>
séminaires, tutorat (avec ou sans participation d'autres enseignants; cette technique peut comprendre des présentations par les étudiants)	<input type="text"/>
travail en petits groupes (l'enseignant surveille plusieurs groups en même temps)	<input type="text"/>
présentations par des étudiants (sans compter les séminaires ou le tutorat)	<input type="text"/>
sessions d'évaluation	<input type="text"/>
audiovisuel (télévision, rubans magnétiques, films, radio, etc.)	<input type="text"/>
classes-promenades et visites par des personnes-ressources	<input type="text"/>
autres techniques (veuillez préciser) _____	<input type="text"/>

⁵ Les heures de laboratoire et autres activités prévues au programme étant comprises dans les heures de classe, à combien estimez-vous le nombre d'heures que vos étudiants consacrent à votre cours EN DEHORS DES HEURES DE CLASSE? Répondez par un pourcentage, la base

de calcul étant: une heure de classe = 100%. Par exemple, si vous pensez qu'ils consacrent 2 heures en dehors de la classe pour chaque heure passée en classe, vous inscrirez 200 dans la case de droite.

--	--	--

⁴ Combien de temps devez-vous consacrer à la révision de la matière qui est censée être assimilée avant votre cours? Évaluez en pourcentage la place qu'occupe cette révision dans votre cours.

--	--

Dans votre cours, les étudiants utilisent-ils le matériel décrit ci-après?

CODE: 0 - pas du tout
 1 - un peu
 2 - modérément
 3 - beaucoup
 9 - item non pertinent

manuel de base

☐

manuel de base et manuel(s) supplémentaire(s)

☐

deux manuels de base ou plus de deux, ou des extraits d'autres manuels

☐

sources secondaires (livres de référence, dictionnaires, encyclopédies, etc.)

☐

⁶ documents

☐

publications et revues savantes

☐

² ensembles d'enseignement individualisé (séries programmées, modules d'apprentissage)

☐

⁷ enseignement par modules

☐

autre matériel de classe (journaux, revues, brochures, etc.)

☐

matériel audio-visuel (télévision, cinéma, magnétophone, etc.)

☐

⁴ matériel de laboratoire ³ (et/ou ordinateurs)

☐

⁷ documents polycopiés (notes de cours et autres documents)

☐

autre matériel (précisez en ajoutant des cases au besoin)

Translations of the rating scale and resources used differed considerably in Physique, which is accordingly reproduced in full below.

En quelle mesure vos étudiants utilisent-ils les ressources mentionnées plus bas dans ce cours?

ECHELLE DE CODIFICATION - 0 - aucune utilisation
 1 - utilisation minimale
 2 - utilisation moyenne
 3 - utilisation soutenue
 9 - ne s'applique pas

manuel de base	<input type="checkbox"/>
manuel de base et d'autres manuels complementaires	<input type="checkbox"/>
deux manuels de base ou plus, ou des extraits d'autres manuels	<input type="checkbox"/>
materiel de laboratoire	<input type="checkbox"/>
notes de cours, etc. polycopiees	<input type="checkbox"/>
livres de reference, dictionnaires, encyclopedies, journaux, etc.	<input type="checkbox"/>
trousses pour l'enseignement individualise	<input type="checkbox"/>
les media audiovisuels (television, rubans, films fixes, etc.)	<input type="checkbox"/>
autres (veuillez precisez) _____	<input type="checkbox"/>

Si vous utiliser un ou deux manuels de base dans ce cours, veuillez en indiquer le titre, l'auteur, la maison d'édition, la date de publication.

Certains cours sont partiellement ou entièrement prévus pour permettre aux étudiants de travailler à leur propre rythme. Ils peuvent commencer à un niveau qui correspond à leurs aptitudes dès le début du cours et progresser presque sans contact ou relation avec les autres étudiants. Dans quelle mesure votre cours suit-il ce modèle?

CODE - 0 - pas du tout
 1 - un peu
 2 - modérément
 3 - beaucoup

☐

Les étudiants peuvent-ils être dispensés de l'examen final selon les résultats obtenus en cours d'année?

1. oui
2. non
3. le cours ne comporte pas d'examen final

☐

Si votre réponse à la question précédente est "oui," veuillez préciser comment cette dispense peut être obtenue.

⁸ Certains cours sont programmés en partie ou en entier afin de permettre à l'étudiant de progresser à son propre rythme. Les étudiants peuvent commencer le cours à plusieurs endroits, selon leur habileté, et s'acheminer sans égard aux autres étudiants, sans même avoir de rapports avec eux. En quelle mesure ce cours correspond-il à ce format?

- 0 - pas du tout
- 1 - un peu
- 2 - passablement
- 3 - énormément

Estimez l'importance relative des critères suivants dans la détermination de l'évaluation finale des candidats, qu'elle soit exprimée par une note chiffrée, une mention, une cote réussite/échec ou une note alpha. Veuillez indiquer votre réponse pour chacun des critères au moyen d'un pourcentage de 0 à 100%. La somme de ces pourcentages devrait être de 100.

examens de fin d'année	<input type="text"/>	<input type="text"/>
examens semestriels	<input type="text"/>	<input type="text"/>
autres tests écrits	<input type="text"/>	<input type="text"/>
autres tests oraux	<input type="text"/>	<input type="text"/>
travaux écrits individuels (dissertations, rapports, compte-rendus, etc.)	<input type="text"/>	<input type="text"/>
travaux écrits de groupe ou d'équipe	<input type="text"/>	<input type="text"/>
⁸ compte-rendus de travaux en laboratoire et/ou cahiers de notes	<input type="text"/>	<input type="text"/>
projets individuels (à l'exclusion des dissertations, rapports, etc.)	<input type="text"/>	<input type="text"/>
projets de groupe ou d'équipe	<input type="text"/>	<input type="text"/>
⁴ exercices		
⁹ problèmes, exercices [⁸ d'application]	<input type="text"/>	<input type="text"/>
participation en classe ou au laboratoire	<input type="text"/>	<input type="text"/>
¹⁰ cahiers	<input type="text"/>	<input type="text"/>
efforts	<input type="text"/>	<input type="text"/>
présence [⁸ assiduité]	<input type="text"/>	<input type="text"/>
⁴ exposés individuels (discours préparés ou spontanés)	<input type="text"/>	<input type="text"/>
⁴ présentations théâtrales en groupe	<input type="text"/>	<input type="text"/>
autres activités (précisez, s.v.p.) _____	<input type="text"/>	<input type="text"/>

Dans quelle mesure utilisez-vous le français comme langue d'enseignement dans votre cours? Donnez votre réponse en pourcentage.

 %

Notes to Part II

1. Omitted in Français
2. Omitted in Mathématique
3. Mathématique only
4. Français only
5. Wording as on Physique questionnaire; there were insignificant differences in translation in other questionnaires.
6. Histoire only
7. Histoire and mathématique only
8. Physique only
9. Mathématique and Physique only
10. Français and Mathématique only

TROISIEME PARTIEOBJECTIFS GENERAUX

Inevitably, this section varied according to the subject, and has accordingly been reproduced in full for each subject. The response key for Histoire was identical with that for Français and has not been reproduced.

FRANCAIS

Aux fins de ce questionnaire, nous croyons utile de donner les définitions suivantes:

- LINGUISTIQUE:** On entend par cours de linguistique un cours où l'on décrit les mécanismes du langage en général ou d'une langue en particulier; un tel cours vise à donner une connaissance théorique de ces mécanismes et n'a pas pour objet l'amélioration de l'expression écrite ou orale de l'étudiant.
- LANGUE:** Les cours de langue, au contraire, visent essentiellement à améliorer l'expression écrite ou orale de l'étudiant; ces cours peuvent être des cours d'expression écrite ou orale, de grammaire et de composition, de stylistique etc.
- LITTERATURE:** Les cours de littérature mettent l'étudiant en contact avec des oeuvres qui ont une triple dimension: linguistique, artistique et culturelle. L'étudiant apprend à apprécier ces oeuvres en observant et analysant le fonctionnement de leurs mécanismes linguistiques, leurs arrangements artistiques et leur contenu culturel.

Les objectifs qui suivent sont d'ordre général. N'hésitez pas à en ajouter s'ils sont trop vagues par rapport à votre cours. Affectez les items du code proposé selon l'importance que vous leur accordez.

- CODE: 0 - Aucune importance
 1 - Très peu d'importance
 2 - Importance moyenne
 3 - Importance considérable
 9 - Item non pertinent

OBJECTIFS GENERAUX ¹	IMPORTANCE ACCORDEE
---------------------------------	---------------------

A. Linguistique:

1. Acquisition des principes fondamentaux de la science linguistique
2. Eveil de la conscience linguistique
3. Connaissance des mécanismes de la langue

☐
☐
☐

B. Langue

4. Savoir parler
5. Savoir écouter
6. Savoir lire
7. Savoir écrire

☐
☐
☐
☐

1. L'ordre des items n'indique aucune hiérarchie.

OBJECTIFS GENERAUX

IMPORTANCE ACCORDEE

C. Littérature

8. Analyse du fonctionnement des
mécanismes linguistiques propres
au texte littéraire ☐
9. Analyse des arrangements artistiques
du texte littéraire ☐
10. Analyse du contenu culturel du texte littéraire ☐
11. Formation du goût littéraire ☐

D. Autres objectifs: (précisez en ajoutant des cases
au besoin)

HISTOIRE

Response Key: As for Français

IMPORTANCE

1. Acquérir un ensemble particulier de
données historiques. ☐
2. Développer les aptitudes nécessaires pour analyser
et interpréter les données historiques. ☐
3. Développer la capacité d'étudier un problème
d'histoire d'après des perspectives diverses. ☐
4. Examiner les questions historiques selon le
contexte temporel. ☐
5. Comprendre le rapport entre les événements
historiques et les problèmes contemporains. ☐
6. Apprendre à percevoir la complexité des questions
historiques. ☐
7. Apprendre à percevoir la rapport entre soi-même et
la société. ☐
8. Apprendre à percevoir l'interdépendance croissante
des nations et des collectivités du monde moderne. ☐
9. Apprécier son héritage culturel ☐
10. Apprendre à percevoir la diversité des cultures. ☐
11. Développer les aptitudes nécessaires pour rédiger et
présenter un travail écrit. ☐
12. Développer les aptitudes nécessaire pour rédiger
et présenter un travail oral. ☐

13. Encourager un haut degré d'excellence dans les études. ☐
14. Développer une attitude qui favorise l'évaluation critique de nouvelles données. ☐
15. Apprendre à percevoir les approches utilisées dans les disciplines connexes (par ex., l'économie, la science politique, la sociologie). ☐
16. Accroître l'intérêt de l'étudiant pour l'histoire. ☐
17. Développer:
- 17.1 le respect et la tolérance pour des opinions et idées diverses; ☐
- 17.2 l'indépendance; le sens des responsabilités; ☐
- 17.3 la confiance en soi; ☐
- 17.4 La conscience sociale (souci pour les autres) ☐
- 17.5 les qualités sociales (l'aptitude à travailler et à avoir des rapports avec les autres). ☐
18. Autre(s) objectif(s) (veuillez précisez) _____ ☐

PHYSIQUE

Les énoncés suivants font connaître des buts généraux de cours de physique. Selon l'importance que vous leur attribuez dans l'enseignement de ce cours, veuillez coter les buts de la liste suivante sur une échelle de 0 à 3, en inscrivant la cote appropriée dans la case à côté de chaque item.

Sentez-vous libre d'inscrire des commentaires au sujet de ces buts au bas de la liste. Vous êtes également invité d'y ajouter et de codifier d'autres buts que vous jugez à propos.

ECHELLE DE CODIFICATION

-
- 0 - Aucune importance
 1 - Très peu d'importance
 2 - Importance moyenne
 3 - Beaucoup d'importance
 9 - Item non pertinent
-

BUT GENERAL

IMPORTANCE RELATIVE

1. L'étudiant devrait acquérir une attitude de curiosité scientifique. ☐
2. L'étudiant devrait pouvoir penser d'une façon rationnelle, et, en particulier, il doit pouvoir:
 - 2.1 organiser les données présentées dans un problème et arriver à une solution ☐
 - 2.2 évaluer en termes empiriques des comptes-rendus de phénomènes observés ☐
3. L'étudiant devrait comprendre la méthode scientifique ☐
4. L'étudiant devrait pouvoir appliquer la méthode scientifique à l'étude du comportement de la matière sous l'influence des forces naturelles et à l'étude des propriétés de ces forces comprenant:
 - 4.1 l'habileté de dessiner une expérience et d'en faire la montage ☐
 - 4.2 l'habileté de prélever des données expérimentales ☐
 - 4.3 l'habileté d'organiser et d'analyser les données expérimentales ☐
 - 4.4 l'habileté d'interpréter les résultats d'expériences en terme de mathématiques et/ou de modèles physiques ☐
 - 4.5 l'habileté de communiquer les résultats expérimentaux d'une façon concise, critique et profitable, démontrant ainsi bonnes connaissances et compréhension ☐
5. L'étudiant devrait reconnaître que les activités des technologues et des ingénieurs sont des applications des principes de la physique, et il devrait chercher à comprendre ces activités comme telles ☐
6. L'étudiant devrait être au courant du développement historique des grandes idées et des concepts de la physique, et de la nature évolutive de ses théories ☐

AUTRES BUTS: (S.V.P. inscrire ici):

7. ☐8. ☐

COMMENTAIRES:

MATHEMATIQUES

ENQUETE EN MATHEMATIQUES

Cette section de l'enquête ne se rapporte qu'aux mathématiques. Elle se compose de deux parties principales, à savoir

III. Buts et objectifs du cours

IV. Contenu du cours et niveau de compétence de l'élève

Puisque vos réponses nous permettront d'obtenir les données nécessaires à l'analyse des cours de mathématiques à travers la zone de relations, nous considérons chacune de ces deux parties comme très importantes. Nous reconnaissons que ces réponses exigeront de votre part un surcroît de travail mais nous comptons sur votre bienveillante collaboration pour nous permettre d'obtenir des données viables et valides. D'avance, nous vous remercions.

Veuillez prendre note que les directives et les renseignements qui sont nécessaires pour compléter le tableau de chaque section se trouvent au début de chacune d'elles. Pour vous faciliter la tâche, il sera peut-être bon d'avoir à portée de la main votre programme d'études et/ou les manuels dont vous faites usage.

Le tableau I qui suit énumère plusieurs buts et objectifs de l'enseignement et de l'apprentissage des mathématiques. Veuillez considérer chacun d'eux en relation avec la façon actuelle d'enseigner votre cours et, à l'aide du chiffre approprié, tiré de la légende des réponses, indiquez dans la colonne l'accent que vous y placez.

Légende des réponses

- 0 - aucun accent
- 1 - peu d'accent
- 2 - assez d'accent
- 3 - beaucoup d'accent
- 9 - ne s'applique pas

Veuillez considérer comme objectifs valables, aussi bien ceux qui sont implicites à votre enseignement que ceux qui sont explicités dans un programme-cadre ou un programme d'étude. Nous vous prions cependant d'être réalistes et d'inscrire "0" vis-à-vis les objectifs sur lesquels vous ne placez pas d'accent et "9" là où les objectifs ne s'appliquent pas.

N'hésitez pas à ajouter d'autres buts et d'autres objectifs si vous croyez qu'ils s'appliquent à votre cours. Nous vous saurions gré aussi d'ajouter vos commentaires dans l'espace prévu à la fin du tableau.

TABEAU IBUTS ET OBJECTIFS DEL'ENSEIGNEMENT ET DE L'APPRENTISSAGE DES MATHÉMATIQUES

BUT OU OBJECTIF

ACCENT DANS
VOTRE COURS

L'élève acquerra et/ou développera

- | | |
|--|--------------------------|
| 1. l'habileté de comprendre et d'employer une terminologie fondamentale | <input type="checkbox"/> |
| 2. des outils conceptuels et pratiques dont il se servira en mathématiques | <input type="checkbox"/> |
| 3. les habiletés nécessaires pour suivre d'autres cours ou effectuer du travail plus avancé dans le domaine des mathématiques | <input type="checkbox"/> |
| 4. l'habileté de pouvoir appliquer ses connaissances et ses habiletés dans d'autres domaines et d'autres situations | <input type="checkbox"/> |
| 5. les habiletés reliées à une occupation subséquente | <input type="checkbox"/> |
| 6. des habitudes de travail systématiques et valables | <input type="checkbox"/> |
| 7. la capacité de travailler seul | <input type="checkbox"/> |
| 8. l'habileté de s'auto-évaluer | <input type="checkbox"/> |
| 9. l'habileté nécessaire pour faire une approximation d'une réponse | <input type="checkbox"/> |
| 10. la connaissance nécessaire pour savoir si une réponse est logique et raisonnable | <input type="checkbox"/> |
| 11. l'habileté de construire, de faire usage et d'interpréter des modèles concrets et des diagrammes mathématiques | <input type="checkbox"/> |
| 12. l'habileté de comprendre un problème rédigé en français et de le traduire en langage mathématique, afin de le résoudre | <input type="checkbox"/> |
| 13. l'habileté de se servir de notations symboliques | <input type="checkbox"/> |
| 14. l'habileté de lire un manuel mathématique | <input type="checkbox"/> |
| 15. une connaissance pratique et usuelle de la littérature de base et des ressources en mathématiques (bibliothèque, manuels, élèves et confrères) | <input type="checkbox"/> |

BUT OU OBJECTIF

ACCENT DANS
VOTRE COURS

- | | |
|---|--------------------------|
| 16. l'habileté de développer une preuve | <input type="checkbox"/> |
| 17. l'habileté d'émettre une hypothèse et d'en vérifier l'exactitude | <input type="checkbox"/> |
| 18. l'habileté de travailler intuitivement et de se servir des niveaux appropriés d'intuition et de rigueur | <input type="checkbox"/> |
| 19. l'habileté de comprendre un argument logique et le sens d'une implication | <input type="checkbox"/> |
| 20. l'habileté de se servir d'exemples et de contre-exemples | <input type="checkbox"/> |
| 21. l'habileté de penser logiquement afin de résoudre des problèmes de façon systématique et de prendre des décisions raisonnées | <input type="checkbox"/> |
| 22. l'habileté de résoudre des problèmes à plusieurs étapes | <input type="checkbox"/> |
| 23. l'habileté de formuler des définitions et de s'en servir | <input type="checkbox"/> |
| 24. l'appréciation et/ou la compréhension des principes sous-jacents à la structure logique des mathématiques | <input type="checkbox"/> |
| 25. une compréhension approfondie d'une section ou d'un thème de mathématiques | <input type="checkbox"/> |
| 26. l'appréciation de la nature et de l'importance d'une preuve mathématique | <input type="checkbox"/> |
| 27. une appréciation de la contribution des mathématiques à l'évolution de la civilisation | <input type="checkbox"/> |
| 28. une appréciation du pouvoir des mathématiques de résoudre des problèmes complexes | <input type="checkbox"/> |
| 29. une compréhension et une appréciation de l'unité qui existe entre les diverses branches des mathématiques, grâce à leur relation | <input type="checkbox"/> |
| 30. l'appréciation du raffinement en mathématique, ex. une preuve | <input type="checkbox"/> |
| 31. l'esprit de jugement et de discernement quant au choix de procédés et à leur pertinence dans la solution de problèmes spécifiques | <input type="checkbox"/> |
| 32. l'acquisition d'attitudes positives vis-à-vis les mathématiques | <input type="checkbox"/> |

BUT OU OBJECTIF

ACCENT DANS
VOTRE COURS

33. l'appréciation des mathématiques comme activité humaine qui vise à accroître les connaissances de l'homme afin qu'il comprenne mieux et qu'il fasse un meilleur usage de son environnement.

☐

Buts et objectifs supplémentaires:

34.

☐

35.

☐

Commentaires:

QUATRIEME PARTIE OBJECTIFS SPECIFIQUES ET NIVEAU DE L'ETUDIANT

This section varied according to the subject and has accordingly been reproduced in full for each subject.

FRANCAIS

Veuillez inscrire vos réponses dans les quatre colonnes à droite de chaque objectif.

En utilisant l'échelle de réponse proposée à la page 12, indiquez quel est, selon vous, le niveau atteint par l'étudiant en rapport avec les objectifs spécifiques du cours.

Dans la première colonne, indiquez le niveau moyen atteint par les étudiants au début du cours.

Dans la deuxième colonne, indiquez le niveau moyen atteint par les étudiants à la fin du cours.

Nous aimerions aussi connaître votre avis sur les points suivants:

Dans la troisième colonne, indiquez le niveau moyen que les étudiants DEVRAIENT avoir atteint, d'après vous, au début du cours.

Dans la quatrième colonne, compte tenu de vos souhaits exprimés dans la troisième colonne, indiquez quel niveau moyen les étudiants POURRAIENT atteindre à la fin du cours.

En résumé, donc,

Colonne 1: Niveau atteint au début du cours.

Colonne 2: Niveau atteint à la fin du cours.

Colonne 3: Niveau souhaité au début du cours.

Colonne 4: Niveau souhaité à la fin du cours.

ECHELLE DE REPONSE

Il est essentiel que nous puissions comparer entre elles les réponses fournies à ce questionnaire aux trois niveaux qui font l'objet de cette enquête: écoles secondaires, collèges communautaires et universités. Il importe donc que les professeurs des écoles secondaires et des institutions post-secondaires utilisent les mêmes catégories pour définir les mêmes choses.

L'échelle que nous vous proposons va de 0 à 7. Certains numéros correspondent à une définition précise:

- 0 - Niveau inacceptable
- 1 - Niveau acceptable
- 3 - Niveau très acceptable
- 5 - Niveau supérieur
- 7 - Niveau idéal

Ces définitions vous sont fournies en tant que points de repère. Nous avons cependant prévu des numéros correspondant à des niveaux intermédiaires pour vous permettre plus de subtilité dans votre appréciation. Ainsi, entre 1 et 3, il y a le niveau 2; entre 3 et 5, il y a le niveau 4 et ainsi de suite.

ECHELLE DE REPONSE

0	1	2	3	4	5	6	7
Niveau inacceptable	Niveau acceptable		Niveau très acceptable		Niveau supérieur		Niveau idéal

Indiquez le numéro qui correspond dans les cases de droite selon les niveaux.

N.B. Si, pour une raison quelconque (e.g. item non pertinent), vous ne pouvez répondre à un item en particulier, tracez une ligne oblique dans les cases correspondantes.

NIVEAU
ATEINT
DEBUT DU
COURS

NIVEAU
ATEINT
FIN DU
COURS

NIVEAU
SOUHAITE
DEBUT DU
COURS

NIVEAU
SOUHAITE
FIN DU
COURS

A. Langue

1. Etude des éléments

fondamentaux de la langue:

1.1 orthographe

☐☐☐☐

1.2 vocabulaire

☐☐☐☐

1.3 grammaire

☐☐☐☐

1.4 stylistique (structures
de phrases, phraséologie
etc.)

☐☐☐☐

2. Travaux écrits:

2.1 compréhension du sujet

☐☐☐☐

2.2 organisation

☐☐☐☐

2.3 rédaction

☐☐☐☐

2.4 analyse et commentaire
de textes

☐☐☐☐

3. Expression orale:

3.1 prononciation

☐☐☐☐

3.2 lecture expressive

☐☐☐☐

3.3 expression spontanée

☐☐☐☐

3.4 exposés

☐☐☐☐

B. Linguistique:

1. Principes généraux

☐☐☐☐

2. Domaines:

2.1 phonétique

☐☐☐☐

2.2 phonologie

☐☐☐☐

2.3 morphologie

☐☐☐☐

2.4 syntaxe

☐☐☐☐

2.5 sémantique

☐☐☐☐

2.6 lexicologie

☐☐☐☐

C. Litterature:

1. Etude de textes:

1.1 poèmes

☐☐☐☐

1.2 romans

☐☐☐☐

1.3 théâtre

☐☐☐☐

1.4 essais

☐☐☐☐

	NIVEAU ATTEINT DEBUT DU COURS	NIVEAU ATTEINT FIN DU COURS	NIVEAU SOUHAITE DEBUT DU COURS	NIVEAU SOUHAITE FIN DU COURS
2. Explication de textes:				
2.1 orale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 écrite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Composition:				
3.1 analyse littéraire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 commentaire de textes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 dissertations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4 rédactions diverses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Culture				
1. Connaissance de l'héritage littéraire et culturel				
1.1 poèmes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 romans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 contes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 théâtre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5 films	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6 chansons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Autres objectifs: (précisez et ajoutez des cases au besoin)				
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CINQUIEME PARTIEDISTRIBUTION DU TEMPS

Dans cette dernière partie du questionnaire, nous vous demanderons de préciser comment vous répartissez le temps en fonction des objectifs du cours.

Dans la case de droite, veuillez indiquer, approximativement, en pourcentage, le temps que vous consacrez à chacun des objectifs. Dans certains cas, l'approximation sera sans doute rendu difficile pour diverses raisons; par exemple, lorsque l'étude de texte s'accompagne de notions d'histoire littéraire qui en favorisent la compréhension. Cependant, en arrondissant les chiffres et en éliminant d'abord les items non pertinents, vous y arriverez.

Vous devez arriver à un total de 100%.

DISTRIBUTION DU TEMPS

OBJECTIF

POURCENTAGE DU
TEMPS CONSACRE

A. Langue

1. Etudes des éléments fondamentaux de la langue:

1.1 orthographe

1.2 vocabulaire

1.3 grammaire

1.4 stylistique (structures de phrases,
phraseologie etc.)

2. Travaux écrits:

2.1 compréhension du sujet

2.2 organisation

2.3 rédaction

2.4 analyse et commentaire de textes

3. Expression orale:

3.1 prononciation

3.2 lecture expressive

3.3 expression spontanée

3.4 exposés

B. Linguistique:

1. Principes généraux

2. Domaines:

2.1 phonétique

2.2 phonologie

2.3 morphologie

2.4 syntaxe

2.5 sémantique

2.6 lexicologie

C. Littérature:

1. Etude de textes

1.1 poèmes

1.2 romans

1.3 théâtre

1.4 essais

2. Explication de textes:

2.1 orale

--	--

2.2 écrite

--	--

3. Composition:

3.1 analyse littéraire

--	--

3.2 commentaire de textes

--	--

3.3 dissertations

--	--

3.4 rédactions diverses

--	--

D. Culture:

1. Connaissance de l'héritage littéraire et culturel:

1.1 poèmes

--	--

1.2 romans

--	--

1.3 contes

--	--

1.4 théâtre

--	--

1.5 films

--	--

1.6 chansons

--	--

E. Autres objectifs: (précisez et ajoutez des cases
au besoin)

1	0	0
---	---	---

II. Secteurs: Comment répartissez-vous le domaine des
études littéraires (en pourcentage)?

1. Littérature française

--	--

2. Littérature canadienne

--	--

3. Littérature étrangère

--	--

1	0	0
---	---	---

Si vous n'avez pu décrire votre cours de façon adéquate grâce à ce questionnaire, veuillez ajouter ci-après des commentaires de nature à le compléter.

HISTOIRE

Dans cette partie, veuillez nous donner un exposé de votre cours en ce qui concerne l'approche utilisée, sa portée et son importance.

Nous avons divisé la partie suivante en deux sections:

I. Organisation générale du cours

II. Objectifs précis

I. Organisation générale du cours

1. Indiquez la (les) principale(s) approche(s) que vous utilisez dans l'organisation de votre cours.

1. thématique (par ex., la constitution des nations, les révolutions, les grands chefs)

1^{er}

☐

1.1 Si vous utilisez une approche thématique, veuillez indiquer votre thème principal.

2^e

☐

2. chronologique

3. par période ou ère (par ex., la Renaissance)

4. par pays

5. par problème

6. autre approche (veuillez préciser) _____

2. Évaluez la proportion du cours consacrée à chaque aspect étudié. Inscrivez un pourcentage (de 0 à 100) dans la case à la droite de chaque question. Les pourcentages doivent arriver à un total de 100.

1. aspect social

2. aspect économique

3. aspect politique

4. aspect culturel

5. autre aspect (veuillez préciser) _____

3. Évaluez la proportion du cours consacrée à chaque pays. Inscrivez un pourcentage (de 0 à 100) dans la case à la droite de chaque question. Les pourcentages doivent arriver à un total de 100.

1. le Canada

2. les États-Unis

3. l'Europe

4. la Grande-Bretagne

5. autre pays (veuillez préciser)

4. Évaluez la proportion du cours consacrée à chaque période du temps. Inscrivez un pourcentage (de 0 à 100) dans la case à la droite de chaque question. Les pourcentages doivent arriver à un total de 100.

- | | |
|--------------------------------------|-------|
| 1. pré-1763 | _____ |
| 2. 1764-1867 | _____ |
| 3. 1868-1911 | _____ |
| 4. 1912-1945 | _____ |
| 5. 1946-présent | _____ |
| 6. autres, (veuillez préciser) _____ | _____ |

5. Si votre cours comprend un secteur d'importance ou d'intérêt particulier non prévu ci-dessus de façon adéquate, veuillez le décrire ci-dessous.

II. Objectifs précis

Dans la présente section, nous avons trouvé qu'il était nécessaire d'insister sur les aptitudes car le large éventail de domaine formant le contenu est trop vaste pour permettre une analyse utile.

Vos réponses doivent porter sur quatre domaines principaux:

1. l'aptitude pour la recherche
2. l'aptitude pour la rédaction
3. l'éloquence
4. l'aptitude pour l'analyse et l'interprétation

A côté de chaque objectif, nous vous demandons d'inscrire vos réponses dans quatre colonnes. Dans la première colonne, indiquez le niveau moyen de compétence que les étudiants ont atteint, selon vous, avant de suivre votre cours. Dans la deuxième colonne, indiquez le niveau moyen de compétence que les étudiants devraient avoir atteint à la fin de votre cours, à votre avis. Dans la troisième colonne, indiquez le niveau moyen de compétence que vous préféreriez constater chez les étudiants qui prennent votre cours. Dans la quatrième colonne, indiquez le niveau de compétence auquel vous pourriez vous attendre des étudiants s'ils commençaient votre cours avec le niveau de compétence que vous préféreriez.

- En resume, 1^{ère} colonne: votre évaluation du niveau moyen de compétence des étudiants qui arrivent;
- 2^e colonne: votre evaluation du niveau moyen de competence normalement atteint par vos etudiants a la fin du cours;
- 3^e colonne: votre préférence en ce qui concerne le niveau moyen de compétence des étudiants qui arrivent;

4^e colonne: le niveau moyen de compétence attendu des étudiants à la fin du cours, si ces derniers possédaient au début le niveau le niveau de compétence préféré.

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Nous avons choisi l'expression niveau moyen de compétence pour décrire le niveau général de compétence d'un groupe d'étudiants, bien que nous nous rendions compte qu'il peut exister de grands écarts entre les étudiants dans un groupe quelconque. Ce compromis nous permettra de résumer rapidement les données et ne semble pas soulever de grandes difficultés quand il s'agit de répondre aux questions.

ECHELLE DE REPONSE RELATIVE AUX OBJECTIFS

Nous devons comparer les réponses touchant les cours d'histoire dans tous les établissements. Il importe par conséquent que les professeurs de 13^e année et de la première année d'université utilisent les mêmes catégories pour représenter la même chose.

Inscrivez le numéro approprié de l'échelle de réponse dans la case à la droite de chaque question.

ECHELLE DE REPONSE

0	1	2	3	4
↓ Aucune compétence	↓ Compétence minimale	↓ Compétence moyenne	↓ Compétence dans des situations diversifiées; une certaine originalité	↓ Maîtrise, niveau élevé de compétence, situation de créativité

Si vous ne voulez pas répondre à une question pour une raison quelconque (par ex. la question ne se rapporte pas à votre cours, vous éprouvez de l'incertitude au sujet de la réponse), tracez un trait diagonal dans la case correspondante.

1
Niveau de
compétence
à l'entrée

2
Niveau de
compétence
normalement
atteint

3
Niveau de
compétence
préférée à
l'entrée

4
Niveau de
compétence
qui serait
atteint en
débutant avec
le niveau de
compétence
préférée

Objectif

A. Recherche

1. Utilisent efficacement les bibliothèques (catalogues sur fiches, ouvrages de référence, encyclopedies, etc.)

☐☐☐☐

2. Trouvent les références historiques (archives, registres des gouvernements, etc.)

☐☐☐☐

3. Utilisent efficacement les références historiques

☐☐☐☐

4. Font la distinction entre les sources principales et secondaires

☐☐☐☐

B. Rédaction

1. Manifestent de la facilité pour planifier et organiser les travaux de rédaction.

☐☐☐☐

2. Emploient la prose claire et concise nécessaire pour présenter des idées par écrit (dissertations, rapports).

☐☐☐☐

3. Emploient des techniques efficaces de prise de notes.

☐☐☐☐

4. Utilisent la terminologie de l'histoire de façon appropriée (par ex. la Renaissance).

☐☐☐☐

5. Observent les règles touchant les mentions de référence (par ex. renvois, bibliographie).

☐☐☐☐

	REEL		PREFERE	
Objectif	1 Niveau de compétence à l'entrée	2 Niveau de compétence normalement atteint	3 Niveau de compétence préférée à l'entrée	4 Niveau de compétence qui serait atteint en debutant avec le niveau de compétence préférée

C. Eloquence

1. Expliquent clairement les idées	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Présentent efficacement un long argument	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Présentent un rapport préparé d'avance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Dans un petit groupe, contribuent efficacement à la discussion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. Analyse et interpretation

1. Comprennent diverses sources historiques:				
1.1 documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 monographies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 textes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 autres sources (veuillez préciser)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Analysent le matériel lu:				
2.1 discernent la thèse ou l'argument principal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 discernent les renseignements importants ou pertinents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Présentent un argument de façon efficace pour ce qui est de l'organisation, de la substance (faits à l'appui), et des conclusions logiques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Font la distinction entre les renseignements essentiels et non-essentiels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Font la distinction entre les faits et leur interprétation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	REEL		PREFERE	
	1	2	3	4
Objectif	Niveau de compétence à l'entrée	Niveau de compétence normalement atteint	Niveau de compétence préféré à l'entrée	Niveau de compétence qui serait atteint en debutant avec le niveau de compétence préféré

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 6. Démontrent qu'ils comprennent les concepts fondamentaux de l'histoire. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Comparent et contrastent diverses interprétations d'événements historiques. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Reconnaissent les opinions préconçues. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Evaluent un argument à la lumière des preuves connues. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Définissent un problème d'histoire en évaluant les données appropriées. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Evaluent les événements en se fondant sur leur contexte historique. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Analysent les caractéristiques d'une période, d'un problème ou d'un thème particulier en histoire. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Utilisent les concepts et les données historiques pour comprendre les problèmes contemporains. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Autres objectifs: (Veuillez préciser en ajoutant des cases au besoin)

Le prochain tableau étale en ordonnée les éléments de contenu qu'on pourrait retrouver dans tous les cours de physique enseignés dans la zone frontière. Ce contenu a été organisé en détail d'après vingt-et-une divisions majeures.

L'axe horizontal permettra de prélever l'information suivante au sujet de votre cours:

1. Répartition du temps

Pour chacune des divisions majeures, veuillez indiquer dans la case à côté de sa particule descriptive, le nombre approximatif d'unités de temps d'enseignement (périodes), parmi celles dont vous disposez pour tout le cours, que vous consacrez aux thèmes particuliers de la division. S.V.P. indiquer la durée en minutes de la période de classe: _____ minutes. Il est possible que certaines des vingt-et-une divisions majeures ne s'appliqueront pas à votre cours, ou que votre présentation de la matière ne s'accordera pas avec cet éventail. Cependant, on aimerait que vous indiquiez, au meilleur de votre connaissance, comment le temps dont vous disposez, tant cours théoriques que sessions en laboratoire, est réparti parmi les divisions majeures qui se retrouvent dans votre cours.

2. Niveau de compétence au début du cours

Que vous sachiez le niveau moyen de la préparation antérieure des étudiants qui s'inscrivent à votre cours vous a permis d'éviter le dédoublement inutile dans l'enseignement du cours. C'est ce niveau qu'on aimerait que vous indiquiez dans la colonne "niveau attribué au départ" pour chaque thème enseigné dans votre cours.

3. Niveau de compétence atteint habituellement par l'étudiant

Nous désirons connaître votre estimation du niveau de compétence moyen atteint normalement par vos étudiants au terme de votre cours, et ce pour chacun des thèmes du cours. Vous devez inscrire ce niveau pour chaque thème enseigné dans la colonne "niveau terminal atteint."

4. Niveau de compétence initial préféré

Vous croyez peut-être que l'enseignement de votre cours serait meilleur si le niveau de compétence de l'étudiant au début du cours était plus élevé ou moins élevé qu'il l'est actuellement (tel que vous avez indiqué sous l'entête no 2). Vous pourriez aussi bien préférer que leur niveau initial demeure inchangé de ce qu'il est maintenant. Veuillez indiquer cette préférence pour chacun des thèmes que vous enseignez sous la rubrique "niveau initial préféré."

5. Niveau de compétence terminal préféré

Si vous avez noté dans la colonne précédente que vous préféreriez un niveau de compétence initial différent, veuillez maintenant indiquer pour chacun de ces thèmes dans la colonne "niveau terminal préféré," le nouveau niveau de compétence que l'étudiant pourrait alors atteindre dans votre cours.

Si, pour quelque raison, vous préférez ne pas répondre à quelque item, veuillez tracer une ligne diagonale dans la case correspondante.

Echelle de codification pour le tableau

L'échelle de codification suivante servira à fournir les renseignements au sujet des quatre aspects de votre cours de physique décrits à la page précédente sous les rubriques no 2,3,4 et 5.

0 - Aucune connaissance

On prend pour acquis que l'étudiant ne connaît rien du thème au départ ou on ne traite pas de ce thème dans le cours.

1 - Descriptive

Les étudiants comprennent le thème d'une façon purement descriptive. Ils peuvent le décrire oralement, connaissent certaines définitions appropriées, et peuvent situer le thème d'une façon générale dans la discipline globale.

2 - Préliminaire

Les étudiants comprennent les concepts pertinents du thème, y compris tout traitement théorique requis. On n'utilise pas d'algèbre vectorielle ni de calcul infinitésimal, et on ne s'attend pas à ce que l'étudiant les possède non plus. L'étudiant peut fournir des réponses descriptives à des questions simples, et, si approprié, il peut compléter des exercices exigeant des manipulations algébriques simples et/ou des méthodes graphiques simples.

3 - Intermédiaire

Les étudiants connaissent les concepts pertinent du thème. Ils savent utiliser de l'algèbre vectorielle simple et des éléments de calcul infinitésimal, si c'est approprié. Les étudiants peuvent également fournir des réponses descriptives aux questions, et si approprié, compléter des exercices numériques utilisant une ou plusieurs des techniques suivantes: manipulations algébriques, vecteurs, méthodes graphiques.

4 - Poussée

Les étudiants maîtrisent les concepts pertinent du thème. Si approprié, ils peuvent utiliser l'algèbre vectorielle et le calcul infinitésimal. Ils peuvent discuter de ce thème en termes descriptifs et même résoudre des problèmes énoncés en termes descriptifs avec ou sans données numériques, en utilisant une ou plusieurs des techniques suivantes: manipulations algébriques, vecteurs, calcul infinitésimal et analyse graphique.

On vous remettra une carte de cotes pour vous faciliter la tâche de compléter le tableau. Veuillez vous en servir à bon escient.

PREFERE

REEL

Niveau de compétence initial
Niveau de compétence terminal
Niveau initial
Niveau terminal
Niveau initial
Niveau terminal
Niveau initial
Niveau terminal

DIVISIONS MAJEURES
DE LA MATIERE

Répartition
du temps

Périodes

- 1. Thème particulier no 1
- 2. Thème particulier no 2
- etc.

Inscrire le nombre approprié de périodes d'enseignement que vous consacrez dans votre cours à cette division majeure. Si vous n'enseignez aucun des thèmes particuliers sous cette rubrique, inscrire 0 dans la case, et passer à la division majeure suivante.

Veillez codifier dans les colonnes I et II chacun des thèmes particuliers que vous enseignez dans votre cours, selon l'échelle de codification ci-dessous. Si vous croyez que le niveau de compétence initial des étudiants devrait être autre que ce qu'il est présentement, veuillez l'indiquer dans la colonne III; dans la colonne IV indiquer quel serait alors le niveau de compétence terminal de vos étudiants.

Echelle de codification:

- 0 - Aucune connaissance - aucune connaissance attribuée a l'entrée ou le thème n'est pas enseigné dans le cours.
- 1 - Descriptive - connaissance purement descriptive.
- 2 - Préliminaire - résoudre problèmes et répondre aux questions sans recourir aux vecteurs ou au calcul infinitésimal.
- 3 - Intermédiaire - utiliser vecteurs et calcul infinitésimal simple dans les exercices, aucun calcul infinitésimal dans les questions.
- 4 - Poussée - utiliser vecteurs et calcul infinitésimal dans les exercices, les questions et les problèmes.

Si, pour quelque raison, vous préférez ne pas répondre à quelqu'item (e.g. l'item ne s'applique pas à votre cours, vous êtes incertain au sujet de la réponse), tracer une ligne en diagonale dans la case.

THEME

1	2	3	4
REEL		PREFERE	
Niveau a l'entree	Niveau a la sortie	Niveau initial prefere	Niveau atteint dans le cours

1. MESURES Répartition du temps Périodes

1. Les quantités fondamentales de
masse, de longueur et de temps
☐ ☐ ☐ ☐

2. Les erreurs

☐ ☐ ☐ ☐
3. Exactitude et précision (chiffres
significatifs, arrondissement
des nombres)
☐ ☐ ☐ ☐

4. S.I.U.

☐ ☐ ☐ ☐
5. Analyse dimensionnelle pour
développer des relations
entre des quantités physiques
☐ ☐ ☐ ☐
6. Consistence des dimensions dans
les équations reliant des quantités
physiques
☐ ☐ ☐ ☐

2. FONCTIONS Répartition du temps Périodes

Etant donné un tableau de données expé-
rimentales:1. Dresser un graphique bien étiqueté
pour représenter les données
☐ ☐ ☐ ☐
2. Ecrire l'équation d'une relation
linéaire
☐ ☐ ☐ ☐
3. Dresser un nouveau graphique d'une
relation non-linéaire afin d'obtenir une
droite, et en établir la relation
☐ ☐ ☐ ☐
4. Dresser un graphique d'une relation
genre puissance sur papier logarithmique
double, puis en écrire la relation
☐ ☐ ☐ ☐
5. Dresser un graphique d'une relation
exponentielle sur papier semi-
logarithmique, puis en écrire la
relation
☐ ☐ ☐ ☐
3. MOUVEMENT Répartition du temps Périodes
(cinématique)1. Mouvement avec accélération uniforme
en une, deux ou trois dimensions
☐ ☐ ☐ ☐
2. Cinématique rectiligne avec
accélération uniforme
☐ ☐ ☐ ☐
3. Cinématique rectiligne avec
accélération variable
☐ ☐ ☐ ☐
4. Cinématique bidimensionnelle avec
accélération uniforme (e.g. le mouvement
de projectiles)
☐ ☐ ☐ ☐
5. Cinématique bidimensionnelle avec
accélération variable (e.g. le mouvement
circulaire)
☐ ☐ ☐ ☐

THEME

1	2	3	4
REEL		PREFERE	
Niveau a l'entree	Niveau a la sortie	Niveau initial prefere	Niveau atteint dans le cours

6. Cinématique en trois dimensions avec accélération uniforme

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

7. Cinématique en trois dimensions avec accélération variable

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

4. PRINCIPES DU MOUVEMENT DE NEWTON - DYNAMIQUE PARTICULIERE

Repartition du temps Périodes

☐

1. La première loi de Newton, masse et inertie

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

2. La seconde loi de Newton

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

3. La troisième loi de Newton

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

4. La résolution et la somme des forces au moyen de dessins à l'échelle

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

5. La résolution et la somme des forces par méthodes analytiques

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

6. Les cadres de référence

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

7. Les forces fictives

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

8. La dynamique du mouvement circulaire

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

5. STATIQUES Répartition du temps Périodes

temps

☐

1. Les moments

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

2. Lois de l'équilibre

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

3. Machines simples, levier, plan incliné, poulies

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

6. PRINCIPES DU MOUVEMENT DE NEWTON - DYNAMIQUE DE CORPS RIGIDES

Répartition du temps Périodes

☐

1. Le mouvement de translation

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

2. Le mouvement de rotation, la torsion, le moment d'inertie, l'accélération angulaire

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

3. Le mouvement composé de translation et de rotation

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

4. Le frottement

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

7. FORCE GRAVITATIONNELLE PRES DE LA SURFACE TERRESTRE

Répartition du temps Périodes

☐

1. Distinction entre force gravitationnelle et masse inerte; principe d'équivalence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Le poids et l'accélération gravitationnelle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. La dynamique du mouvement de projectiles (dans le vide)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. La dynamique du mouvement de projectiles (avec résistance de l'air)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Dépendance de g sur la distance séparant le corps du centre de la terre et sur la latitude	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. GRAVITATION UNIVERSELLE

Répartition du temps Périodes

☐

1. Ptolémée, Copernicus, Kepler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Les lois de Kepler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. La loi de la gravitation universelle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Les orbites circulaires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Le mouvement d'un corps sous l'influence d'une force centrale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. QUANTITE DE MOUVEMENT

Répartition du temps Périodes

☐

1. Impulsion et quantité de mouvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. La conservation de la quantité de mouvement en ligne droite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Les collisions élastiques (en une seule dimension)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Les collisions inélastiques (en une seule dimension)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Les collisions de mobiles en deux dimensions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. La quantité de mouvement angulaire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. La conservation de la quantité de mouvement angulaire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Précession (mouvement retrograde)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

THEME

10. TRAVAIL, ENERGIE, PUISSANCE

Répartition du temps Périodes

☐

1. Travail accompli par une force constante
2. Travail accompli par une force variable (e.g., $F=kx$)
3. Travail accompli par une force variable (e.g., Fx $1/r$)
4. Travail accompli dans la compression d'un gaz
5. L'énergie cinétique; la relation entre l'énergie cinétique et le travail mécanique
6. L'énergie potentielle où la force est constante (e.g., mgh)
7. L'énergie potentielle où la force est variable (e.g., $\frac{1}{2}kx^2$ ou $G\frac{m_1m_2}{r}$)
8. Conservation de l'énergie mécanique (transformations d'énergies cinétiques et potentielle)
9. Puissance
10. Efficacité de travail

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. OSCILLATIONS ET ONDES

Répartition du temps Périodes

☐

1. Les oscillations
2. Description cinématique du mouvement harmonique simple, ($y=A \sin \omega t$ ou cercle de référence)
3. Le mouvement d'une particule sous l'influence d'une force harmonique ($F=-kx$)
4. Solutions de l'équation du mouvement pour un système oscillateur (seconde loi de Newton)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

5. Une masse accrochée à un ressort

6. Le pendule simple (où l'angle d'écartement de la verticale est faible, permettant les approximations d'usage.

7. Le pendule rigide (où l'angle d'écartement est faible)

8. Les oscillations de torsion

9. La conservation de l'énergie dans les oscillations libre

10. Taux exponentiel de la décadence des oscillations

11. Dérivation de l'équation différentielle exprimant la propagation des ondes à compression dans un gaz ou des ondes transversales dans un fil

12. Relation entre fréquence, longueur d'onde et vitesse de propagation ($V=f\lambda$)

13. Ondes se propageant en une seule dimension

14. Ondes se propageant en deux dimensions

15. La polarisation

16. L'effet Doppler

17. Ondes de choc

18. L'énergie transportée par une onde unidimensionnelle

19. L'intensité relative et absolue des ondes sonores (décibels)

20. L'energie emise par une source ponctuelle de radiation (la loi de l'inverse du carré de la distance)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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12. COMPORTEMENT DE LA LUMIERE

Répartition du temps Périodes

☐

1. Discussion qualitative des sources lumineuses
2. Propagation rectiligne des ondes lumineuses
3. Le concept de l'onde frontale
4. Le principe de Huygens

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

THEME

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

5. La réflexion des ondes par une surface plane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. La réflexion des ondes par une surface sphérique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Miroirs convexes et concaves				
a) dessins à l'échelle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) traitement analytique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. La réfraction des ondes par une surface plane séparant deux milieux	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Le concept de l'indice de réfraction (loi de Snell-Descartes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. La réflexion totale interne	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. La réfraction dans un prisme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Le spectromètre à prisme - déviation minimale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. La puissance de dispersion d'un milieu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. La réfraction à une surface sphérique séparant deux milieux	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. L'équation d'occuliste pour les lentilles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. L'équation des lentilles minces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. La formation des images par les lentilles				
a) dessins à l'échelle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) traitement analytique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. La puissance d'une lentille	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. L'aberration chromatique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Les aberrations monochromatiques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. L'oeil et la camera	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Les défauts de l'oeil et les lentilles correctives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Les microscopes simple et composé	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Le télescope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. INTERFERENCE ET DIFFRACTION

Répartition du temps Périodes

☐

1. Superposition d'impulsions et/ou d'ondes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Réflexion et transmission d'impulsions et d'ondes à la frontière de deux milieux	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial prefere	Niveau atteint dans le cours

3. Ondes stationnaires sur un fil, les extrémités étant fixes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Ondes stationnaires dans une colonne à bouts ouverts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Ondes stationnaires dans une colonne dont un bout est fermé, l'autre ouvert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Interférence d'ondes périodiques, deux sources ponctuelles dans un milieu bidimensionnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Les effets d'interférence au moyen de fentes doubles (l'expérience de Young)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Les effets d'interference au moyen de fentes multiples	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. La diffraction de Fraunhofer au moyen d'une arête droite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. La diffraction de Fraunhofer au moyen d'une fente simple (interférence due à une fente simple)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. La diffraction de Fraunhofer au moyen d'un orifice circulaire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. La diffraction de Fraunhofer au moyen d'une grille optique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Le critère de résolution de Rayleigh	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Puissance de résolution d'une grille à diffraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Le spectromètre à grille à diffraction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. La diffraction de Fresnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Les effets d'interférence dans les pellicules minces parallèles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. L'interféromètre de Michelson	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Les effets d'interférence dans les pellicules minces non parallèles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

THEME

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

4. ELECTRICITE ET MAGNETISME

Répartition du temps Périodes

☐

1. L'électrostatique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. La force électrique (loi de Coulomb)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Le champ électrique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Energie potentielle électrique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Différence de potentiel électrique - le volt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Les sources de force électromotrice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. L'expérience de Millikan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Le mouvement d'une charge électrique - l'ampère	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. La loi d'Ohm - résistance constante	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. La résistance d'un conducteur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Les circuits à courant continu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Les lois de Kirchhoff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. La capacité électrique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Les propriétés de diélectriques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Les facteurs de transformations dans les circuits redressés	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. La puissance électrique dans les circuits à courant continu (DC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Le magnétisme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Le champ magnétique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. La force agissant sur une charge électrique se déplaçant dans un champ magnétique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Le rapport de la charge de l'électron à sa masse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Le champ magnétique dû au mouvement d'une charge électrique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Force agissant sur un conducteur porteur de courant dans un champ magnétique uniforme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Instruments de mesure électriques-galvanomètres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Les moteurs électriques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4
REEL		PREFERE	
Niveau a l'entree	Niveau a la sortie	Niveau initial prefere	Niveau atteint dans le cours

- [illegible]

15. STRUCTURE DE L'ATOME

Répartition du temps Périodes

1

- [illegible]

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

THEME

6. PHYSIQUE NUCLEAIRE

Répartition du temps Périodes

☐

1. La désintégration d'atomes radio-actives

☐☐☐☐

2. Radiations alpha, beta, gamma; propriétés et spectres

☐☐☐☐

3. Dépistage de la radiation

☐☐☐☐

4. Structure du noyau

☐☐☐☐

5. Propriétés des nucléons

☐☐☐☐

6. Les réactions nucléaires - nature générale

☐☐☐☐

7. La fission nucléaire

☐☐☐☐

8. La fusion nucléaire

☐☐☐☐

9. Les dangers de radiation

☐☐☐☐

7. TEMPERATURE ET CHALEUR

Répartition du temps Périodes

☐

1. Température

a) échelles

☐☐☐☐

b) méthodes de mesure

☐☐☐☐

2. Dilatation thermique

☐☐☐☐

3. Chaleur

a) Théorie cinétique

☐☐☐☐

b) Distribution des vitesses d'après Maxwell

☐☐☐☐

c) Transformation d'énergie mécanique en énergie thermique

☐☐☐☐

d) Chaleur spécifique

☐☐☐☐

e) Calorimétrie

☐☐☐☐

f) Les lois des gaz

☐☐☐☐

g) Les changements de phases

☐☐☐☐

h) La tension de vapeur et l'humidité

☐☐☐☐

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

4. Transfert de chaleur

a) Convexion

b) Conduction

c) Radiation

5. Thermodynamique

a) Premier principe

b) Second principe

c) Cycle de Carnot

18. PROPRIETES DES SOLIDES, AUTRES QUE THERMIQUES

Répartition du temps Périodes

☐

1. Les propriétés cristallographiques de corps solides simples

2. Les propriétés d'élasticité, la loi de Hooke, modules et obéissance sous l'effet des forces

3. Les propriétés électroniques: structure des lisières; conducteurs, semi-conducteurs et isolants

4. Les propriétés électroniques, la diode

5. Les propriétés électroniques, le transistor

19. FLUIDES AU REPOS ET EN MOUVEMENT

Répartition du temps Périodes

☐

1. Densité absolue et relative

2. Pression atmosphérique - le baromètre

3. Pression hydrostatique - loi de Pascal

4. Le principe d'Archimède - la poussée d'un liquide (flottabilité)

5. Tension superficielle et l'action capillaire

6. L'écoulement de fluides, les conditions d'enchaînement

7. L'écoulement aérodynamique

8. Le principe de Bernoulli

9. L'écoulement turbulent

10. La viscosité

11. Loi de Poiseuille

THEME

1	2	3	4
REEL		PREFERE	
Niveau à l'entrée	Niveau à la sortie	Niveau initial préféré	Niveau atteint dans le cours

0. THEORIE DE LA RELATIVITE RESTREINTE

Répartition du temps Périodes

☐ ☐ ☐ ☐
1. PROPRIETES DE PARTICULES FONDAMENTALES
(autres que le proton, le neutron ou l'électron)

Répartition du temps Périodes

☐ ☐ ☐ ☐

2. AUTRES THEMES (veuillez en dresser la liste et les codifier)

Répartition du temps Périodes

☐ ☐ ☐ ☐

HABILETES MATHEMATIQUES

Les mathématiques sont le langage de la physique; c'est pourquoi les étudiants doivent posséder certaines habiletés mathématiques. Veuillez utiliser la codification suggérée pour compléter le tableau ci-dessous en indiquant dans les cases appropriées si vous vous attendez à ce que vos étudiants possèdent chaque habileté, et si vos attentes sont comblées.

ECHELLE DE CODIFICATION

- 0 - Je ne m'attends pas à ce que les étudiants possèdent cette habileté.
- 1 - Les étudiants devraient normalement posséder cette habileté, mais la plupart d'entre eux ne la possèdent pas.
- 2 - Les étudiants devraient posséder cette habileté, et, en effet, la plupart d'entre eux la possèdent.

Habiletés mathématiques
des étudiants à l'entrée

1. Habileté d'utiliser les concepts de rapports et proportions	<input type="checkbox"/>
2. Habileté d'utiliser les logarithmes	<input type="checkbox"/>
3. Habileté d'utiliser des fonctions exponentielles	<input type="checkbox"/>
4. Habileté de convertir les degrés en radians	<input type="checkbox"/>
5. Habileté d'utiliser des fonctions trigonométriques	<input type="checkbox"/>
6. Habileté d'utiliser des identités trigonométriques	<input type="checkbox"/>
7. Habileté de manipuler des équations linéaires	<input type="checkbox"/>
8. Habileté de résoudre un système d'équations linéaires simultanées	<input type="checkbox"/>
9. Habileté d'extraire les racines d'une équation quadratique	<input type="checkbox"/>
10. Habileté d'obtenir la dérivée de fonctions simples	<input type="checkbox"/>
11. Habileté d'intégrer des fonctions différentielles simples	<input type="checkbox"/>
12. Habileté de manipuler les vecteurs	<input type="checkbox"/>
13. Habileté de travailler avec facilité en algèbre vectorielle	<input type="checkbox"/>
14. Habileté d'appliquer l'expansion binominale	<input type="checkbox"/>

CONTENU DU COURS ET NIVEAU DE COMPETENCE DE L'ELEVE

MATHEMATIQUES

Year 4 and CAAT

Le tableau II qui suit présente une liste complète des thèmes étudiés à l'école secondaire et dans les collèges communautaires, et qui ont été identifiés pour être inclus dans ce projet. Ces cours sont

1. à l'école secondaire - Application des mathématiques 2.
- Fondements des mathématiques 2.
2. dans les collèges communautaires - dans la plupart des cas, les cours de mathématiques ordinairement offerts au premier semestre dans les divisions du commerce et de la technologie.
- ¹1. à l'école secondaire - Les relations et les fonctions
(au niveau du Le calcul
secondaire 5) L'algèbre
- ¹2. à l'université - Cours majeurs des Facultés des Arts et de Génie
e.g. Le calcul
Les fondements, l'algèbre générale
L'algèbre linéaire
Les probabilités et les statistiques

Veillez d'abord lire rapidement le tableau II afin d'obtenir une impression générale de son contenu et de son format et veuillez ensuite poursuivre la lecture de cette introduction.

Vous aurez remarqué qu'il y a cent quarante-cinq articles thématiques dans le tableau. Nous avons disposé ces articles en onze sections, tel qu'il est indiqué plus bas, afin de vous aider à répondre aux questions et afin aussi de faciliter l'analyse de vos réponses.

SECTION	THEMES	NOMBRE D'ARTICLES
I.	Arithmétique fondamentale	12
II.	Arithmétique commerciale	12
III.	Algèbre fondamentale	22
IV.	Equations et fonctions quadratiques	12
V.	Fonctions exponentielles et logarithmiques	14
VI.	Suites et séries	5
VII.	Vecteurs et géométrie analytique	15
VIII.	Geometrie synthetique	10
IX.	Trigonométrie, statique et nombres complexes	18
X.	Calculs	15
XI.	Statistiques et probabilités	10

¹ Year 5 and University only

¹ Vous aurez remarqué qu'il y a deux cent trente-huit articles thématiques dans le tableau. Nous avons disposé ces articles en sept sections, tel qu'il est indiqué plus bas, afin de vous aider à répondre aux questions et afin aussi de faciliter l'analyse de vos réponses.

¹ SECTION	THEMES	NOMBRE D'ARTICLES
I.	Relations et fonctions (secondaire 5)	16
II.	Calcul (secondaire 5 et université)	64
III.	Algèbre (secondaire 5)	22
IV.	Certains thèmes communs (secondaire 5)	21
V.	Fondements, algèbre générale (université)	45
VI.	Algèbre linéaire (université)	33
VII.	Probabilité et statistiques (secondaire 5 et université)	37

Puisque vous ne vous préoccupez ici que d'un ou peut-être deux de vos cours en questions, et du contenu qui lui est antérieurement nécessaire, vous ne devriez normalement pas répondre à tous les articles ni même à la majorité d'entre eux.

Vous aurez aussi remarqué qu'il faut inscrire dans chacune des cinq colonnes:

1. le temps consacré en classe au thème
2. le niveau moyen de compétence que l'élève a acquis à l'entrée
3. le niveau moyen de compétence à sa sortie
4. le niveau moyen de compétence que vous aimeriez que l'élève ait acquis à l'entrée
5. le niveau moyen de compétence que vous aimeriez que l'élève ait acquis à sa sortie.

Veillez d'abord remplir la colonne 1, puis les colonnes 2 et 3 ensemble et finalement les colonnes 4 et 5 ensemble. D'après notre expérience, il faut une moyenne de deux heures pour remplir les cinq colonnes. Avant de commencer, veuillez lire les remarques suivantes qui indiquent les modalités dont il faut tenir compte dans vos réponses.

1. Le temps consacré en salle de classe
Si vous enseignez au secondaire, il est probable que vous préparez chaque thème en fonction d'un certain nombre de "périodes." Si vous enseignez dans un collège communautaire, il est probable que votre unité de temps est d'une heure. Encerclez d'abord l'unité de temps que vous jugez la plus appropriée ("période" ou heure) et remplissez les articles suivants:

¹Year 5 and University only

nombre total de "périodes" ou d'heures pendant l'année _____

nombre total de "périodes" ou d'heures consacrées à la
revue du travail dans les cours antérieurs _____

- * S'il s'agit d'une période, précisez la durée de cette unité
en minutes.

Cochez maintenant la case au haut de la colonne 1 dans le tableau II et, dans la case à côté de chaque thème que vous enseignez actuellement, inscrivez le chiffre approprié. Veuillez vous assurer que le nombre total de "périodes" ou d'heures que vous avez inscrit dans les cases correspond approximativement au nombre total d'heures dans le cours, en excluant le temps des épreuves mais en incluant le temps de la revue.

3. Niveau actuel de compétence à l'entrée et à la sortie

Vous devez dans la deuxième colonne faire une estimation du niveau moyen de compétence de l'élève à son entrée à votre cours. Dans la troisième colonne, nous vous prions de faire une estimation du niveau moyen de compétence que les élèves ont normalement atteint à la sortie de votre cours. En comparant les colonnes 2 et 3, nous pouvons faire une estimation de ce qui s'enseigne normalement dans votre cours. Puisque cette zone s'étend sur une période de deux ans d'enseignement et comme il est possible que les thèmes aient été enseignés avant le début de ce projet, nous voulons nous assurer que les réponses données par les enseignants des niveaux secondaire et post-secondaire sont évaluées sur la même échelle numérique et que toutes les réponses ont la même signification.

Nous avons donc choisi une échelle de réponses de six points. Nous conservons également toujours à l'esprit le fait qu'il s'agit du niveau moyen de compétence des élèves.

NIVEAU
DE
COMPETENCE

NIVEAU MOYEN
DE COMPETENCE
DES ELEVES

- | | |
|---|--|
| 0 | Nous tenons comme acquis que l'élève ne possède aucune connaissance de ce thème. |
| 1 | Ne fait que se rendre compte et n'a qu'une connaissance descriptive du thème; n'a aucune habileté pour en faire l'application. |
| 2 | Possède des connaissances et des habiletés élémentaires basées sur une introduction quantitative; ne peut faire que des exemples et des problèmes élémentaires. |
| 3 | A une compréhension opératoire du thème et peut faire des exercices et des problèmes ordinaires; possède une certaine facilité de traduction de problèmes en termes mathématiques et peut situer le thème dans un contexte plus vaste. |
| 4 | Possède une connaissance complète du thème et de sa place en mathématiques; peut solutionner une vaste étendue de problèmes, prouver des théorèmes, généraliser et fournir des exemples. |
| 5 | Possède une connaissance approfondie du thème: les concepts de base font partie de ses antécédents en mathématiques et il peut les appliquer à la solution de problèmes non routiniers, symboliques, verbaux ou |

extraits de la vie courante. Il comprend la base théorique du thème et les limites de son application.

Résumée en courtes phrases descriptives, l'échelle de réponses se lit ainsi:

NIVEAU	COMPETENCE MOYENNE
0	L'élève n'a aucune connaissance.
1	Une connaissance descriptive seulement.
2	Une connaissance et une habileté quantitatives élémentaires: ne peut effectuer que des application faciles.
3	Compréhension opératoire: peut faire des exercices et des problèmes ordinaires.
4	Connaissance complète: peut solutionner une vaste étendue de problèmes et généraliser.
5	Connaissance approfondie: Comprend la base théorique et les limites de l'application; peut solutionner des problèmes non routiniers de toutes sortes.

- 4, 5. Le niveau moyen de compétence à l'entrée et à la sortie
 Les deux dernières colonnes sont là pour que vous puissiez comme enseignant de ce cours indiquer 1) le niveau moyen de compétence que vous préféreriez que l'élève possède dans chaque thème pertinent à son entrée à votre cours 2) le niveau moyen de compétence que vous vous attendez que l'élève possède dans ce thème à la sortie de votre cours par rapport à son niveau moyen à l'entrée.

Vous voudrez peut-être vous servir de vos réponses aux colonnes 2 et 3 comme point de repère de sorte qu'il y ait concordance entre elles et vos réponses finales. D'habitude vous n'inscrivez de réponses qu'aux thèmes auxquels vous avez répondu dans les colonnes 2 et 3. Cependant sentez-vous bien libre de répondre à des thèmes autres que ceux de votre cours si vous croyez qu'il est important de le faire. Prière de répondre en employant le code 0 à 5 dont vous vous êtes servi aux colonnes 2 et 3 et, pour faciliter votre tâche, servez-vous de la carte spéciale.

Quelques commentaires finals

Il est possible qu'il y ait des thèmes qui soient pertinents à votre cours mais qui ne sont pas dans notre liste. Si tel est le cas, nous vous demandons de bien vouloir les ajouter à la fin de notre liste et d'y répondre.

Comme il a été dit antérieurement, n'hésitez pas à vous servir de votre programme d'études, des devoirs d'élèves, des manuels scolaires et des autres ressources qui pourraient vous aider à répondre.

Finalement, il nous fera plaisir de recevoir dans l'espace réservé aux commentaires, tout autre renseignement qui, selon vous, pourrait nous être utile dans l'évaluation de tous les cours de cette zone de relations comme, par exemple, la quantité de temps que vous passez à faire des digressions ou encore le niveau d'abstraction dans l'enseignement de votre cours.

POUR LA ZONE DE RELATIONS: ÉCOLE SECONDAIRE - COLLEGE COMMUNAUTAIRE

1	2	3	4	5
Temps de classe utilisé période <input type="checkbox"/> heure <input type="checkbox"/>	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

hème

ARITHMETIQUE FONDAMENTALE

1. Opérations fondamentales d'arithmétique avec fractions décimales et entiers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Les propriétés de commutativité, d'associativité et de distributivité, appliquées à ces opérations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Pourcentages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Intérêt simple et composé.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. La mensuration: emploi de nombres exacts et approximatifs (erreur, précision, exactitude, arrondissement).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Conversion à une notation scientifique et vice-versa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Notation scientifique: emploi en calcul et en approximation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Système métrique: emploi des unités traditionnelles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Système métrique: le Système international d'unités.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Présentation de données par illustrations (bandes, lignes, graphiques de nombres dirigés, histogrammes, graphiques circulaires).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Opérations fondamentales avec les nombres entiers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Nombres réels (rationnels, irrationnels; les décimales, périodiques et non périodiques).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ARITHMETIQUE DU CONSOMMATEUR

1. Propriété domiciliaire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Impôt foncier.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Devises étrangères.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Equations d'équivalence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Annuités ordinaires	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Annuités dues et différées.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Actions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Fonds d'amortissement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Droits de douane et impôts d'accise.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Obligations et débetures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Impôt sur le revenu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Analyse du seuil de rentabilité.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sor

III. ALGEBRE FONDAMENTALE

1. Arithmétique généralisée: symboles littéraux, notion d'une variable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Mise en exercice, simplification et évaluation d'expressions algébriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Equations linéaires et problèmes de mots à une variable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Système d'équations linéaires à deux variables; son application.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Système d'équations linéaires à trois variables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. L'emploi de déterminants dans la solution d'équations linéaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. L'emploi de matrices dans la solution d'équations linéaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Inéquations linéaires et solution graphique de problèmes de programmation linéaire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Mise en facteurs: sortes diverses; fractions complexes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Travail avec des expressions algébriques rationnelles et fractionnaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Solution d'équations rationnelles simples.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Travail avec les radicaux et les nombres irrationnels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Solution d'équations irrationnelles et avec radicaux.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Quatre opérations fondamentales sur les polynômes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Mise en exercice, mise en ordre et évaluation de formules algébriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Analyse dimensionnelle: emploi avec formules et préfixes (e.g. kilo, micro).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Concept de relations: classes, graphiques et inverses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Concept de fonction: notation et évaluation d'expressions écrites en notation fonctionnelle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Composition et combinaison de fonctions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Rapport et proportion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Variation (directe, inverse, commune) et applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Théorème du binôme ($r^{\text{ième}}$ terme; applications).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

hème

V. FONCTIONS ET EQUATIONS QUADRATIQUES

1. La fonction quadratique et ses propriétés: paraboles, graphiques symétrie et intersection avec les axes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. L'inverse d'une équation quadratique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Problèmes de maximums et de minimums: solutions graphiques et algébriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Applications: régions, fonction injective, valeur absolue et inverse multiplicatif.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Polynômes de degré supérieur: graphiques, théorème de factorisation et mise en facteurs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Translation dans le plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Equations quadratiques: formules, problèmes; compléter le carré.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Systèmes linéaires quadratiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Inégalités quadratiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Applications: (e.g. racines, non-réelles, équations semblables à $\sqrt{4-3x} - x + 12$)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Théorie d'équations quadratiques: nature des racines, discriminant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Théorie d'équations quadratiques: la somme et le produit des racines, applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FONCTIONS EXPONENTIELLES ET LOGARITHMIQUES

1. Exposants: nombres entiers naturels, nombres entiers, nombres rationnels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Graphiques de fonctions exponentielles communes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Définition de e^x et a^x ; loi des exposants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Equations exponentielles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Emploi des tables exponentielles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Logarithmes: définitions et relation avec la fonction exponentielle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Lois des logarithmes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Calcul avec des logarithmes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Logarithmes naturels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Equations logarithmiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Discussion et graphiques des fonctions logarithmiques, exponentielles et des semi-logarithmes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Applications au commerce et/ou à la technologie (croissance et désintégration).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Opération et emploi de la règle à calcul.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thème

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

14. Opération et emploi de calculatrices.

☐☐☐☐☐

15.

☐☐☐☐☐

VI. SUITES ET SERIES

1. Suites: définitions, termes généraux, graphiques, limites.

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2. Applications (séries arithmétiques, géométriques et de Fibonacci).

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3. Séries: définitions, notation, les premiers nièmes termes.

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4. Formules: séries arithmétiques, géométriques et convergentes.

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5. Le raisonnement inductif en mathématiques.

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6.

☐☐☐☐☐

VII. GEOMETRIE ANALYTIQUE ET VECTEURS

1. Lieu géométrique; applications.

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La droite

2. Obtention de plusieurs formes d'équations: deux points, pente-point et points d'intersections avec les axes.

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3. L'identification, la construction et la reproduction graphique de la droite à partir de certaines données.

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4. L'emploi de données expérimentales pour obtenir la meilleure droite possible; l'interpolation.

☐☐☐☐☐

5. Espace cartésien en trois dimensions et applications.

☐☐☐☐☐

Cercle et sphère

6. Equation du cercle et ses propriétés fondamentales (symétrie, cordes, intersection).

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7. Tangentes au cercle et à la sphère; applications.

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Parabole, ellipse et hyperbole

8. Sections coniques dans notre entourage.

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9. Techniques de construction: brochure de courbe; vocabulaire fondamental.

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10. Définitions; équations de forme canonique; propriétés; problèmes.

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11. Systèmes d'équations linéaires - quadratiques.

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12. Problèmes et applications.

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13. Emploi de transformations.

☐☐☐☐☐

Vecteurs en trois dimensions

14. Coordonnées, triples ordonnées, modèles, vecteurs égaux.

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15. Addition, multiplication scalaire, problèmes.

☐☐☐☐☐

16.

☐☐☐☐☐

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

GEOMETRIE SYNTHETIQUE

1. Concept du lieu géométrique; applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Cercle: définition, terminologie fondamentale et formules.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Cercle: propriétés d'angles, de cordes de sécantes et de tangentes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Sphère: définition, formules, propriétés.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Applications de vecteurs: transformations de lieux géométriques, cercles et sphères.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Problèmes célèbres en géométrie: cercles à neuf points, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Figures semblables en deux et en trois dimensions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Applications de figures semblables: théorème du moyen proportionnel, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Géométrie des solides: mensuration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Géométrie euclidienne et autres.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TRIGONOMETRIE, NOMBRES COMPLEXES, ET STATIQUETrigonométrie

1. Fonctions trigonométriques fondamentales et réciproques: définitions, graphiques, propriétés.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Identités fondamentales et développements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Mesure en radian.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Amplitude, période, déphasage et graphiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Solutions d'équations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. L'inverse des fonctions trigonométriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Applications de transformations linéaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Lois du sinus et du cosinus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Solution de triangles-rectangles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Solution de triangles obliques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Coordonnées polaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Nombres complexes

12. En forme rectangulaire ($x + iy$).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. En forme polaire (r, θ) ou $r(\cos \theta + i \sin \theta)$.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. En forme exponentielle ($re^{i\theta}$).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Applications: courant alternatif, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thème

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

Statique

16. Moment de forces.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Centre de gravité.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Friction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

X. CALCUL

1. Limites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Procédés- Δ et pente.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Dérivés de polynômes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Dérivés d'expressions algébriques exigeant les lois du produit, du quotient et de la puissance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Applications de différentiabilité: problèmes de maximums et de minimums; brochure de courbe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Applications de différentiabilité: géométrie, degré de vitesse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Dérivés de fonctions transcendantes trigonométrique, logarithmiques et exponentielles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Applications impliquant des fonctions transcendantes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Différentielle et différentiation inverse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Intégration approximative; méthode des trapèzes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Intégrale indéfinie, théorème fondamentale du calcul.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Intégrale définie, aire sous une courbe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Intégrales indéfinies et leur évaluation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Autres applications (veuillez spécifier).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Formules d'intégrations qui incluent des puissances, des logarithmes, des exposants et de la trigonométrie, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

XI. STATISTIQUE ET PROBABILITE

1. Statistique: emploi, cueillette des données, illustration et interprétation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Statistique descriptive: moyenne médiane, mode et écart type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Applications: dans la vie journalière, dans le contrôle de la qualité industrielle (vérification, échantillonnage).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

ème

4. Emploi de techniques de dénombrement: permutations, combinaisons, diagrammes schématiques.
5. Probabilité empirique et à priori avec exemples courants et expérimentaux (e.g. pile ou face).
6. Loi des nombres supérieurs; implications.
7. Règles fondamentales de la probabilité: événements simples, composés et indépendants.
8. Concept de distribution probable.
9. Applications: génétique de Mendel, solution de problèmes d'attente en mathématiques, etc.
10. Théorème de Bayes.
- 11.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTAIRES:

MATRICE DU CONTENU MATHÉMATIQUE
POUR LA ZONE DE RELATIONS ÉCOLE SECONDAIRE - UNIVERSITÉ

Thème

1	2	3	4	5
Temps de classe utilisé période <input type="checkbox"/> heure <input type="checkbox"/>	NIVEAU DE COMPÉTENCE			
	ACTUEL		PRÉFÉRÉ	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la so

I. RELATIONS ET FONCTIONS
(secondaire 5)

1. Fonction représentée graphiquement comme une correspondance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Inverse d'une fonction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. A l'aide d'habiletés déjà acquises, graphiques et propriétés d'une relation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. A l'aide de la définition 'foyer-directrice', équations et graphiques de coniques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Equations de coniques en position non canonique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Applications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Intersection d'une droite et d'une conique, e.g. une tangente.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Intersection d'une conique et d'une autre conique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Domaine, ensemble d'arrivée et graphiques des fonctions trigonométriques fondamentales.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Formules trigonométriques ordinaires et leurs applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Problèmes d'identité trigonométrique et équations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Déphasage, période et amplitude.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Translation du plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Rotation du plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. La réflexion comme bijection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Equation générale de la conique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

II. CALCUL

Thèmes 1-15 - enseignement élémentaire
16-64 - enseignement approfondi

1. Limite d'une fonction: approche intuitive par l'entremise de suites et de séries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Taux de changement: pentes, sécantes et tangentes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Dérivée d'une puissance, d'un produit et d'un quotient.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Autres dérivées: fonction de la fonction, fonctions trigonométriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. L'application de dérivées aux tangentes d'une courbe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Autres applications: vitesse et accélération.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

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7. Deuxième dérivée et son emploi: tracé de courbes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Problèmes de maximums et de minimums.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Problèmes avec la dérivée (taux de changement).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Equations différentielles; l'antidérivée appliquée aux courbes et aux déplacements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. L'aire entre les courbes et les axes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. L'aire renfermée entre les courbes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Volume d'une rotation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. L'intégration en se servant de méthodes numériques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Applications impliquant les nombres complexes et les coordonnées polaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>					
16. Nombres réels: les axiomes, les bornes supérieures et la densité.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Preuve par induction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Inégalités.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Notation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Motivation; introduction historique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. La définition et l'algèbre des limites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Fonctions: définition, algèbre, composition, inverse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Continuité: définition, algèbre de fonctions continues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Théorèmes de fonctions continues</u>					
24. Valeur intermédiaire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Valeur extrême.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Dérivée</u>					
26. Définition et algèbre de la dérivée.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Règle de dérivation des fonctions composées.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Dérivation des fonctions élémentaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Théorèmes de différentiation</u>					
29. Rolle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Valeur moyenne.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Applications de la différentiation</u>					
31. Vitesse relative.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Optimisation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Esquisse de graphiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Exemples scientifiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. La règle d'Hôpital pour les limites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
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ALGEBRE (secondaire 5)

Ensembles, sous-ensembles

1. Définitions et lois de la combinaison.
2. Principes de dénombrement fondamental.
3. Permutations.
4. Combinaisons.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Induction mathématique

5. La méthode: emploi avec les propriétés de la notation sigma.
6. Applications et contre-exemples.
7. Théorème du binôme.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Vecteurs

8. Définition et propriétés.
9. Emploi en géométrie.
10. Vecteurs décrits en paires ordonnées ou en triples ordonnées.
11. Composantes linéaires de vecteurs.
12. Définition, formules et propriétés algébriques d'un produit scalaire.
13. Projections, vecteurs unitaires; applications à la physique.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Equations de droites

14. Equations linéaires et vectorielles en deux dimensions.
15. Equations paramétriques et vectorielles en trois dimensions.
16. Angles dirigés, cosinus et nombres.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Equations de plans

17. Equations paramétriques, linéaires et vectorielles en trois dimensions.
18. L'ensemble solution de deux et de trois équations linéaires.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Système d'équations linéaires

19. m équations en n variables.
20. Matrice augmentée; forme échelonnée de lignes réduites.
21. Solution en forme paramétrique.
22. Cohérence et inconsistance.
- 23.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thème

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

IV. QUELQUES THEMES COMMUNS (secondaire 5)

Matrices et transformations linéaires

1. Matrices: définitions, équations, propriétés.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Transformations linéaires: exemples, produit intérieur, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Transformations linéaires: a^{-1} , propriétés matrices non-renversibles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Groupes, anneaux et corps

4. Définition, étude et emploi de groupes typiques, e.g. groupes symétriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Systèmes de nombres et ensemble de fonctions comme groupes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Permutations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Propriétés du groupe de matrices 2×2 .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Transformation du tétraèdre régulier et du cube.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Propriétés et exemples d'anneaux et de corps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Nombres complexes

10. Définition et propriétés de corps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Solution d'équations quadratiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Représentation géométrique et polaire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Théorème de De Moivre.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Coordonnées polaires

14. Correspondance entre les formes rectangulaire, polaire et vectorielle comme moyen d'identification du point P et conversion de l'une à l'autre.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Le tracé de graphiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Raisonnement logique

16. Langage, proposition, trois connectifs de base.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Connectifs et quantificateurs logiques; emploi dans les preuves et contre-preuves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mathématiques d'investissement

18. Intérêt composé et annuités.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Valeur actuelle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Achat à tempérament et hypothèque.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Bons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

Thème

V. FONDEMENT, ALGEBRE GENERALE (université)

Théorie des nombres

1. Postulat de Peano.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Induction mathématique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Divisibilité: (nombres premiers; p.g.c.d., algorithme d'Euclide).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Congruence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Equations diophantiennes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Système de nombres

6. Rationnels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Réels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Nombres complexes: forme polaire, diagramme d'Argand.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Cardinalité.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Polynômes

10. Factorisation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Racines: multiples, simples, les coefficients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Fonctions rationnelles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Décomposition en éléments simples.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Groupes

14. Axiomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Groupes cycliques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Groupe de permutations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Groupes de transformations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Groupes de figures isométriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Sous-groupes et classes latérales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Homéomorphismes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Sous-groupes normaux.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Groupes de facteurs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Anneaux et domaines intégraux

24. Axiomes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Idéal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Exemples (\mathbb{Z} , polynôme, matrice)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thème

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

Corps

27. Q, R.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Corps ordonné.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Corps fini.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Applications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Relation d'ordre partiel

31. Algèbre de Boole.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Applications de l'algèbre de Boole.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Ensemble ordonné.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Ensemble ordonné réticulé.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Théorie des graphiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Combinaisons

36. Ensembles et sous-ensembles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Partition, combinaisons et permutations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Fonction génératrice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Théorème: binôme, multinôme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Sommation et différences finies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Equations de différence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Probabilité.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Inégalités

43. Moyens: arithmétique et géométrique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Cauchy-Schwartz.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Approche générale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VI. ALGEBRE LINEAIRE

1. Discussion de l'espace en deux et en trois dimensions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Combinaisons linéaires et indépendance linéaire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Ensemble mesuré, base.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Dimension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Sous-espace.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

Thème

Opérateurs linéaires

6. Algèbre des opérateurs linéaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Représentation avec matrices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Echange de coordonnées.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Forme échelonnée d'une matrice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Systèmes d'équations linéaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Déterminants.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Méthode de Cramer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Valeurs caractéristiques et vecteurs caractéristiques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Forme canonique de Jordan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Espaces duaux, fonctions linéaires, le dual d'un opérateur.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Formes bi-linéaires et quadratiques

16. Diagonalisation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Signature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Produit intérieur d'espace: propriétés de base.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Produit extérieur.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Opérateur symétrique.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Opérateur orthogonal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Théorème d'axes principaux.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Inéquations linéaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Programmation linéaire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Jeux.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applications de l'algèbre linéaire

26. Géométrie.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Traitement de Markov.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Circuits électriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Problèmes de vibrations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thèmes numériques

30. Solution de systèmes linéaires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. La matrice inversive.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Solution d'équations par itération.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Conditionnement (mal)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thème

1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

VII. PROBABILITE ET STATISTIQUES

1. Cueillette de données et leur représentation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Eléments groupés, histogrammes, polygones de fréquence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Mesures de tendance centrale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Mesures de dispersion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Analyse de données: ajustements et résidus.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Etendues-échantillons et événements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Probabilité d'un événement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Evénements complémentaires et mutuellement exclusifs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Probabilité conditionnelle et indépendante.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Variables discrètes prises au hasard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Variables continues prises au hasard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Attente mathématique et variance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Distribution du binôme.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Distribution de Poisson.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Distribution normale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Distribution d'échantillonnages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Théorème de la limite centrale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Vérification et intervalle de confiance pour une proportion (1 et 2 échantillons)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Vérification et intervalle de confiance pour la moyenne (1 échantillon, 2 échantillons, variances égales).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Comparaison de deux moyennes (variance inconnue et inégale).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Inférences sur la variance d'une population normale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Erreurs de Type I et de Type II.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Inférence bayésienne.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Inférence fiduciaire et structurale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Inférence de vraisemblance directe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Théorie de décision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Chi-deux et tables de contingence.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Vérifications nonparamétriques.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Intervalles de confiance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Régression et corrélation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Plan de recherche expérimentale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

thème

801				
1	2	3	4	5
Temps de classe utilisé	NIVEAU DE COMPETENCE			
	ACTUEL		PREFERE	
	Niveau moyen à l'entrée	Niveau moyen à la sortie	Niveau moyen à l'entrée	Niveau moyen à la sortie

32. Analyse de variance.
33. Enquête par sondage.
34. Contrôle de qualité.
35. Emploi de tables de nombres au hasard.
36. Emploi d'ensembles de données réelles.
37. Emploi de l'ordinateur pour des problèmes de statistique.
- 38.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTAIRES:

Si vous n'avez pu décrire votre cours de façon adéquate grâce à ce questionnaire, veuillez ajouter ci-après des commentaires de nature à le compléter.

Merci pour votre collaboration.

D. INTERVIEW SCHEDULES

SECONDARY SCHOOL DEPARTMENT HEAD INTERVIEWS

SECONDARY SCHOOL _____

DEPARTMENT _____

INTRODUCTION

I represent a research team from Queen's University and St. Lawrence College in Kingston who have been contracted by the provincial Ministries of Education, and Colleges and Universities to study the relationship between courses at secondary schools and courses and programs at Universities and Community Colleges.

In this phase of our study, we are seeking to determine the changes that have taken place over the past 10 years in your subject area, and what trends are discernible as a result of these changes.

IMPRESSIONS ABOUT CHANGES IN COURSES OVER THE PAST TEN YEARS

- | | | |
|---|-------|-------|
| 1. Have there been changes in the number of courses your department offers? (What types of courses have been added or dropped?) If yes, why? | Yes | No |
| | _____ | _____ |
| 2. Have there been changes in the content or emphasis of the courses in your subject area (in any year or level of difficulty). If so, why have the changes been made? | Yes | No |
| | _____ | _____ |
| 3. Have there been any changes in teaching methods? If so, why? | Yes | No |
| | _____ | _____ |
| 4. Have there been changes in the way in which students are marked? (e.g. changes in weight placed upon final exams; testing, oral work) If so, why? | Yes | No |
| | _____ | _____ |
| 5. Have there been any changes in the pattern of marks assigned to students? (e.g. higher/lower; fewer failures) If so, why? If so, does this mean a change in standards has taken place? | Yes | No |
| | _____ | _____ |

IMPRESSIONS ABOUT STUDENTS OVER THE PAST TEN YEARS

- | | | |
|---|-------|-------|
| 6. In general have student competencies changed? (e.g. quality of preparation; competence in basic skills; competence in skills required for subject) If so, why? | Yes | No |
| | _____ | _____ |

- | | | |
|--|------------------|-----------------|
| 7. How much variation do you find in the competencies of students coming in to your classes? If the variation is substantial, why? | Yes

_____ | No

_____ |
| 8. Do you think students' attitudes have changed?
(e.g. toward course, work) | | |

IMPRESSIONS CONCERNING CHANGES IN ROLE OF MINISTRY, BOARD, COMMUNITY

- | | | |
|---|------------------|-----------------|
| 9. Do you think the Ministry of Education's role has changed? (e.g. control, support) Why? | Yes

_____ | No

_____ |
| 10. Has the Board of Education's role changed? (control, support). Why? | Yes

_____ | No

_____ |
| 11. Have there been changes in the response of the community to the educational program offered by the school? Why? | Yes

_____ | No

_____ |

We recently surveyed a number of college instructors in order to obtain a description of the first year course(s) they were teaching. This survey is part of a study, called the "Interface Study", contracted by the Ontario Ministries of Education and Colleges and Universities. You may be familiar with it. We now wish to find out how the courses we have studied differ from courses taught in earlier years. There are a few questions we would like to ask you. Your responses will remain anonymous and, of course, your institution will not be identified.

First of all, do you have any questions at this stage?

1. These are the first year courses which we are studying.
 - a) Are the courses we have selected typical of first year courses in this department? Yes _____
No _____
 - b) (If "No", find out in what ways the courses we selected differ from the typical course; e.g., content, emphasis, evaluation)
2.
 - a) Have any of these courses changed since 1968? Yes _____
No _____
 - b) (If response is "Yes", please describe the changes.)
3.
 - a) Have there been any changes in instructional techniques since 1968? Yes _____ No _____
 - b) (If response is "Yes", please describe the changes; e.g., individualization; small group work, use of audiovisual equipment.)
4.
 - a) Re mathématiques et physique:
To what extent are the above courses taught in French?
 - b) Have the courses always been taught in French? Yes _____ No _____
 - c) (If "no", please describe when and why the change occurred.)
 - d) Is the textbook (Are the textbooks) used in the course(s) written in French or English? French _____
English _____

College Interview

5. a) Are there any remedial courses offered by your department
Yes _____ No _____
- b) (If "yes", please identify remedial course(s) and estimate enrolment.
Are they credit or non-credit?)
- c) Are there first year courses which have a remedial component?
Yes _____ No _____
- d) (If "yes", please identify the course(s) described.)
6. a) Have any new first year courses been added or dropped since 1968?
- b) If so, please describe them.
- c) Why were the changes made? (e.g., pressure from students, faculty,
administration, employers, public.)
7. a) How much autonomy do instructors have with regard to their courses?
- b) If they have much autonomy, in what areas do they have it? (e.g.,
course objectives, content, texts, type of evaluation to be used,
attendance policies, etc.)
8. a) Do you think that students coming into the college have changed?
Yes _____ No _____
- b) If so, please describe the ways in which they have changed. (e.g.,
knowledge, understanding, skills, attitudes, motivation, work and
study habits.)
- c) How have your first year courses adjusted to the changes of incoming
students? (That is, if you think they have changed.)
9. a) Have methods used to assess students changed since 1968? Yes _____ NO _____
- b) If, "Yes", in what way? (e.g., emphasis on test rather than examin-
ations, attainment of objectives.)
10. a) Have standards of student achievement changed over the years since
1968? Yes _____ No _____
- b) If "Yes", can you explain in what way(s) they have changed? (e.g.,
lower, higher, more variability, more or fewer failures, higher grades.)
11. a) Are there any other comments you would like to make about first
year courses offered by your department?
- b) Are there any other comments you would like to make about incoming
students?

Thank you for your time and cooperation.

To the Interviewer:

In addition to the interview, we would appreciate it if you could collect course outlines/course objectives, evaluation instruments and descriptions of how the final mark was computed for the years indicated on the Checklist for College Chairmen. (See the checklist for explanation of evaluation instruments and basis for final mark descriptions) If the chairman would prefer, you may leave the checklist with him/her. The material should be sent to our office as soon as possible. The address is on the checklist. Thank you.

(A Checklist for use by the registrar provided shown to record data for the years 1965/66, 1968/69, 1971/72, 1974/75 and 1975/76. It included the following notes.)

1. Using your 1975/76 calendar as a guide, we have indicated the courses we are concerned with. We realize that these course numbers may have changed over the past years and ask you to fill in the appropriate numbers.
2. For our purposes, evaluation instruments are to include tests, examinations, report and essay topics, presentation topics and any other assignments given a student.
3. We are interested in finding out on what basis the final mark was computed; that is, the proportion of the final mark designated to each type of evaluation. For example, what proportion or percent of the final mark comes from class tests? If the information about the basis of the final mark is available but not included in the course outline, would you please record the weighting given on each evaluation instrument. Please identify all material pertaining to a course by its code number, if possible, or by year.

Thank you for your time and cooperation. Please send the material you have collected to our office as soon as possible. The address is: Interface Study, Room 111, St. Lawrence Hall, Queen's University, Kingston.

INTERVIEW SCHEDULEDEPARTMENT HEADS

1. University _____

2. Department _____

We recently surveyed a number of university instructors to learn about the courses they were teaching. Some of them were in your department. We now want to find out how these courses differ from courses taught in earlier years. We would like some help from you in answering some questions. Of course, we'll treat your answers as being confidential. Your institution won't be identified and neither will you.

I have a checklist of the things I would like either to take away with me or have you send and I'll leave this with you for your secretary. Perhaps we could discuss these for a few minutes so as to get a better understanding of your feelings.

Our particular interest is in courses _____ which were the ones we studied, but some questions apply to first year courses in general.

1. Have these courses (those listed above), been given for the past ten years?

If not, when was each introduced?

Has there been any change in content/emphasis in these courses?

2. Have any (other) first year courses been added in the past ten years?

Why (where did pressure to add these courses come from? Colleagues? Administration? Students? Others?)

3. Have any first year courses been dropped in the past ten years?

What type of course?

Why? (probe questions as above)

4. Are you offering any courses which are wholly or largely remedial in nature?

Are these credit courses?

How are students directed to these courses?

5. Have you felt any pressure to add or drop courses to which you did not respond?

Where did the pressure come from?

Why did you not respond?
6. Are classes organized any differently than they were? Smaller classes?

More sections? Why?
7. Have teaching methods changed?, more/less use of teaching assistants, more/fewer seminars, use of audio-visual aids, other. Why?
8. Are you spending more time on review than you did in former years? Why?
9. Have ways of evaluating students changed? More/less emphasis on final exams, more/fewer tests, more/fewer essays, other? Why?
10. Do you think there has been any change in marks over the years? Higher/lower averages, more/fewer A's, other? Why?
11. How would you rate the overall competency of incoming students compared to that in former years? Knowledge of subject, attitude (describe), general ability, other.

What explains these changes?
12. Do you feel that the marks students receive in first-year courses are a realistic indicator of their competence?

Do you feel that the situation has changed in this respect in the past ten years?
13. Can you indicate the degree of autonomy that individual instructors have in defining course details, setting of exams, and similar matters?

Do you feel that the situation has changed in this respect in the past ten years?
14. Finally, we have been asked to determine what if any coordinating mechanisms are operative within your discipline. Are you aware of or active in any of these?

SECONDARY - POST-SECONDARY INTERFACE STUDYCollege Registrar Interview Schedule

College Name:

Registrar's Name:

Introduction

I represent a research team from Queen's University and St. Lawrence College who has been contracted by the provincial government Ministries of Education and Colleges and Universities to study the secondary - post-secondary interface.

In this phase of our study, we are seeking to determine practices and trends over time in Ontario's Colleges of Applied Arts and Technology.

Responses to these questions will be treated anonymously and analysis and interpretation of findings will not be used to single out individuals or institutions.

Impressions of Incoming Students

1. We are interested in your impressions of changes in incoming students over time.
 - a) subject competency
 - b) attitude
 - c) motivation
 - d) other

Admission Policy

- 2a) We would appreciate receiving copies of your admissions policy for the years, 1968-69, 1971-75 and 1975-76.
- b) Has it varied over time? If so why?
- c) Special circumstances - e.g., how do you admit students to programs in high demand such as nursing?

Enrolments

- 3a) Ministry data on program enrolments is available since 1970. We would like to know enrolments by program for 1968-69 and 1969-70.
- b) Course enrolment data is also required on the following entry level courses.

	1968-69	1971-72	1974-75	1975-76
Mathematics				
English				
Physics				

3c) What proportion of your students entered with:

	1968-69	1969-70
Grade 12		
Partial Grade 12		
Full Grade 12		
Previous post-secondary background		

Advanced Standing

4a) What procedure is followed in granting advanced standing?

b) Under what circumstances is advanced credit given?

c) Who determines advanced standing?

- i) subject specialist _____
 - ii) chairman _____
 - iii) registrar _____
 - iv) committee _____
- How composed?

4d) Are advanced credits given for electives later on in a program on the basis of Grade 13 courses completed, or university credits?

_____ Yes

_____ No

If yes, on what basis?

e) What proportion of students were granted advanced standing in the following subjects on entry to first year?

	1968-69	1971-72	1974-75	1975-76
Mathematic				
English				
Physics				

Remedial Courses

5a) Do you offer "remedial" courses in:

	Yes	No	Course No.
Mathematics			
English			
Physics			

5b) Course enrolments in remedial courses:

	1968-69	1971-72	1974-75	1975-76
Mathematics				
English				
Physics				

Grading System

6a) What grading system do you use?

b) Do all departments use the same grading system?

_____ Yes _____ No

If no, note variance and why?

c) Have you always used the present grading system?

_____ Yes _____ No

If no, what other grading systems have you used since 1968? Why were they adopted or changed? What pressures brought about change?

6d) Grade distribution (including failures):

	1968-69	1971-72	1974-75	1975-76
Mathematics				
English				
Physics				

Organization

7a) Do you have a separate:
Mathematics Department

_____ Yes _____ No

English Department

_____ Yes _____ No

If no, where is the subject taught?

If yes, are there any exceptions where Mathematics and English are taught by the separate department? - get details - (e.g., Business Mathematics offered by the Business department)

Francophones - Cambrian and Algonquin

8a) What percent of first year students are Francophones?

	1968-69	1971-72	1974-75	1975-76
Francophones				

b) What schools do they come from?

c) What percent of the Francophone students enrol in French instruction courses?

	1968-69	1971-72	1974-75	1975-76
Francophones				

CAAT Studies

9. Have you done or are you aware of any studies that may be useful to us? If so, get details of how to get study--or if internal, ask for a copy

Thank you for your time and cooperation.

Registrar's Checklist10. Checklist of Data that may not be immediately available.

1. Admissions policy statement for

1968	1971	1974	1975

2. Program enrolments for:

1968-69	1969-70

3. Course enrolments for introductory level:

	1968-69	1971-72	1974-75	1975-76
Mathematics				
English				
Physics				

4. Student background:

	1968-69	1969-70
Grade 12		
Partial Grade 12		
Grade 13		

Previous post-
secondary background

5. Advanced standing:

Proportion of students receiving advanced standing credit in:

	1968-69	1971-72	1974-75	1975-76
Mathematics				
English				
Physics				

6. Remedial Courses:

	1968-69	1971-72	1974-75	1975-76
Mathematics				
English				
Physics				

7. Grade distribution (including failures):

	1968-69	1971-72	1974-75	1975-76
Mathematics				
English				
Physics				

8. Francophones:

Percent of first-year students whose mother tongue is French

	1968-69	1971-72	1974-75	1975-76
Francophones				

Please send the material you have collected to our office as soon as possible. The address is: Interface Study, Room 111, St. Lawrence Hall, Queen's University, Kingston, Ontario.

UNIVERSITY REGISTRAR INTERVIEW SCHEDULE

University _____

Registrar _____

I am here as a member of the research team from Queen's University working on Project III of the Interface Study. As you probably know, this is a fairly extensive and intensive look at the interface between the secondary and post-secondary educational institutions in the province. Our task is a review of all aspects of the course offerings in several disciplines, on both sides of the interface. Among other things, we are interested in learning about changes which have taken place over time.

I will leave a list with you of the things we would like to have, but we are also interested in your perception and any additional information on such things as admission practices which can be handled verbally better than in writing.

Of course, any information which you provide will be treated as confidential and neither you nor your institution will be identified in any way with it.

1. Admission policies

Among the things we are asking you to supply are copies of university calendars for several years in the past. I take it that each would describe the admission policy in force at that time?

Yes _____

Not completely _____

For example, does it give the grade point average a secondary school graduate would require for consideration. If not, can you now look these up from your records and tell me for the following years:

1965/66

1968/69

1971/72

1974/75

1975/76

Are there any other similar rules of thumb or guidelines that you have used to select among the applicants when there are more than can be admitted?

Has your practice in this connection changed over the past ten years?
How? Why?

2. Enrolments

We are asked to study trends in enrolment in various courses and disciplines. In order to make our request to you as straightforward as possible, we are asking for enrolment in all first year courses for the same years which we mentioned above for calendars. This will include enrolment in programs in cases, such as engineering, where there is no choice among the various courses.

3. Without focussing attention on any particular subject area, but speaking of first-year courses in general, do you feel that they have changed in level of difficulty in the past ten years.

If so, how?

If not, in general, do you think any particular courses have changed?

Why have these changes occurred?

4. Are any courses offered, by any department, which are largely or wholly remedial in nature?

How are students directed to these?

How have enrolments in these courses changed in the past decade?

5. Are any first-year credit courses essentially identical to secondary school courses in the same discipline? For example, an introductory calculus course which would be equivalent to Grade XIII Calculus?

6. Can a student receive a first-year credit for any work done in an Ontario secondary school?

7. Is a uniform grading scheme used in all departments?

What is it?

Marks?

Letter grades?

Other?

8. We are required to provide marks by course giving averages and distribution and how they have changed over the years. If it happens that you have done any analysis of marks and could let us have a copy of the results, we would like it. In any case, we would like to have the marks assigned by course for those courses we studied. If courses were not offered under these numbers in earlier years, we would like the marks on the closest equivalents.

E. RATING VALIDATION

RATING VALIDATION ANALYSIS

Rating validation instruments (item rating scales) were administered in English, French and mathematics courses, in an attempt to measure possible discrepancies that might exist between secondary and post-secondary instructors in the use of the response keys in assessing average levels of student competence. The instructors in these disciplines were asked to rate a hypothetical student response to a stated test question as demonstrating a level of competence that was to be indicated by the same response key used in the subject questionnaires to assess average student competence level. (In mathematics, only the test question was stated; the response was assumed to be the correct one.) The test questions and their hypothetical answers are presented following this section.

It was hoped that if discrepancies between secondary and post-secondary instructors' use of the response key existed, they would show up uniformly in the items for the particular discipline, in terms of differences in mean instructors' ratings across the two sides of the interface.

Procedures

Four different rating validation instruments were administered:

(1) English, (2) French, (3) Mathematics year 4 vs college, (4) mathematics year 5 vs university. Instrument 1 (English) is analyzed according to three comparisons: year 4 general vs college, year 4 advanced vs college and year 4 vs university. Instrument 2 (French) was used only for the year 5 vs university interface. Instrument 3 was divided into two parts, Technology Mathematics and Business Mathematics, which are analyzed separately. The samples of secondary and post-secondary instructors used in the analysis consisted of those who answered the questions in the

particular part (Technology or Business). The Functions-Calculus and Algebra portions of instrument 4 are also analyzed separately. Probability and Statistics is not analyzed because the number of instructors responding to this section was too small.) Thus there are 8 comparisons: 3 in English, 1 in French, and 4 in mathematics.

The analyses comprise three parts. The first consists of paired histograms for each item in each comparison (Tables 1a-1h) and a pooled within-group interitem correlation matrix for each comparison (Tables 2a-2h). The second stage is a profile of item means constructed for each side of the interface in each of the 8 comparisons. For each comparison, we ask whether it is consistent with the data that, except for sampling error, the secondary and post-secondary profiles are parallel; in other words, for a given comparison do the two population means differ by a uniform amount for all items? The third part of the analysis, performed for each comparison where the null hypothesis of parallelism of profiles could be accepted, is a 95% confidence interval for this uniform difference between item means in the instrument. The statistics for the second and third stages are presented in Tables 3a-3h.

In the next section are presented the essential results of this analysis, together with some comments. The sections which follow contain the complete subject-by-subject analyses. Finally, there is a short technical note justifying the procedure used to test the parallelism of profiles and the procedure for the confidence intervals for uniform between-group differences.

Summary of Findings

The use of the rating validation instruments has detected a discrepancy of up to half a point between secondary and post-secondary instructors in the year 5-university mathematics interface and in all English interfaces. Thus, it would be reasonable to adjust questionnaire responses pertaining to level of entry and exit by this amount for these interfaces. It should be noted, however, that the instrument used in the English rating validation analysis did not reflect the diversity of skills represented by the list of English course topics. It should be

also noted that the mathematics rating items made no reference to hypothetical student responses, but only to questions the student was assumed to answer correctly. In addition, we wish to point out that although the same response keys were used for the item ratings as for the topics list, the rating of hypothetical responses to given items is not the same thing as the rating of student competence in topics one is teaching, and if discrepancies between two groups of teachers exist they may not be quantitatively reflected by the same numbers in the two different uses of the response keys. This may be especially true when the rating of the competence of one's students is to an extent a rating of one's own success as a teacher.

A. ENGLISH

The histograms displayed in Tables 1a, 1b and 1c show the secondary teachers' responses on the left, and the post-secondary on the right. The 8 vertical dashes refer to the 8 possible numerical ratings with 0 at the top and 7 at the bottom. The most striking thing about these histograms is the teacher-to-teacher variation in the rating of any one item. Thus, for quite a few items, one or more teachers rated the item as "0" (no competence) and one or more teachers rated it as "7" (competence in high-level creative situations).

Tables 2a, 2b and 2c show the pooled within-group interitem correlations for the three English comparisons. We note that, of the 165 correlation coefficients in the 3 tables, only 3 are negative ($-.05$ to $-.01$), and that the vast majority of the coefficients lay between $.05$ and $.50$. Such consistently positive correlations did not appear in the French and mathematics analyses. We speculate that the consistency of the English correlations was due to the fact that all items were rating the same skills (responding to a piece of literature with a paragraph of interpretation).

The row marked "difference" in each section of Table 3 indicates whether or not there was a consistent difference between secondary and post-secondary ratings, referred to here as bias. Such a bias existed for year 4 general vs college interface (Table 3a) and for the year 5 vs university interface (Table 3c), but not for the year 4 advanced vs college interface (Table 3b). This is most evident from the sign of the

"difference" row, but is formally concluded from the exclusion or inclusion of 0 with respect to the 95% confidence interval for a population difference between groups, assumed uniform across items. This assumption of uniform difference (i.e., assumption of parallel profiles) was tested as a null hypothesis, also in Table 3. For all 3 English comparisons this null hypothesis was accepted.

The overall conclusion is that year 5 teachers tended to give higher ratings for the same responses than did the university professors. Similarly year 4 teachers tended to give higher ratings than did the college instructors. These differences, averaged over items, were in the range 0.4 to 0.5. However, the average ratings of the year 4 advanced English teachers were at about the same level as that of the college instructors.

B. FRENCH

For comments on how to read the histograms and how generally to interpret Table 3d, see section A.

In Tables 1d to 3d the French items are numbered consecutively from 1 to 20. This is slightly different from the numbering on the item rating form, where the first 3 items, for example, were 1, 2a and 2b.

As was the case with English, the histograms displayed in Table 1d show a large teacher-to-teacher variation in the rating of any item.

The correlations in Table 1d show more variation than in the case of English; they range from -0.33 to .72 with 22 out of 190 being negative. It should be noted that the French items cover a considerable range of skills, from technical grammar points to subtle idiomatic usage and literary comprehension. The fact that most correlations are positive indicates a reasonable degree of consistency in an individual teacher's use of the response key.

Table 3d indicates no consistent bias (difference between secondary and post-secondary ratings) across items. Items 6, 16, and 17 show that secondary teachers assigned moderately higher ratings for these items than post-secondary teachers; however, items 5, 15 and 19 show the reverse. The bias in the remainder of the items was quite small. The null hypothesis of parallel

profiles is consistent with the data; however, if the secondary and post-secondary profiles are assumed parallel, they virtually coincide (mean difference = 0.02). Thus it was not possible to adjust average levels of competence in French on the basis of the rating validation instrument data.

C. MATHEMATICS

For comments on how to read the histograms and how generally to interpret Table 3, see section A.

When the initial versions of Tables 1e through 1h were produced, there were an unexpectedly high number of "0" ratings on difficult items. It was finally decided that at least some teachers who had made these ratings had misinterpreted the key "No knowledge" to mean that students would not know how to answer the question, rather than applying the correct meaning: that the question could be answered correctly without knowledge of mathematics. Since zero responses were thus ambiguous, it was decided to treat them as non-responses and remove them from the data set. Hence all mathematics histograms in Table 1 show no data in cell 0.

For the analyses of Table 3 it is required that all teachers in the sample, for any one comparison, have ratings on every item. Because of the high non-response rate for Functions-Calculus item 5 and Algebra item 7, these items were removed from the analysis to prevent the sample sizes from becoming too small. These deletions apply to Table 2 and Table 3.

The correlations in mathematics, as displayed in Tables 2e through 2h, cover a broad range, namely from -0.61 to 0.75. This reflects a wide variation of content measured within each instrument; however, it must be kept in mind that, since all the post-secondary sample sizes were under 30, sample correlations of 0.6 and 0.75 reflect true correlations which may differ only slightly from zero.

Referring to Tables 3e and 3f, both of the year 4 vs college comparisons show some positive and some negative differences between secondary and post-secondary means. It is not possible with either comparison to arrive at a meaningful between-group

distance that is either positive or negative. There are some noticeable patterns in the data of Tables 3e and 3f, however. The ordering of the item means for the secondary teachers is nearly the same as for the post-secondary. We note, furthermore, that the range of item means is more spread out for the secondary data than for the post-secondary. The college instructors gave higher lows and lower highs than the secondary school teachers; interitem differences were less for the college instructors. In the case of the Technology comparison, this difference in range caused the hypothesis of parallel profiles to be rejected. We raise the speculation that this could be due to lack of uniformity of conditions under which the rating forms were filled out; perhaps it made a difference whether or not the rating items were responded to at the same time as the questionnaire items.

Tables 3g and 3h show the mean responses of year 5 secondary school teachers of mathematics to be generally higher than those of the university professors. For the Functions and Calculus items the difference in the sample was significant, reflecting a difference in the population means between the 95% limits 0.24 and 0.70. For the Algebra items the difference was not significant; this could be chiefly due to the small number of teachers of university algebra in the sample. A reasonable overall inference would be that an adjustment of between $\frac{1}{4}$ point and $\frac{1}{2}$ point would be appropriate for the year 5-university mathematics interface.

Technical Note on Test for Parallel Profiles and Confidence Interval

The test for parallel profiles is described in D. F. Morrison, Multivariate Statistical Methods, Sec. 4.6, 2nd ed. (McGraw-Hill, 1976), page 155. In the same section Morrison describes a test of the hypothesis that the profiles, assumed to be parallel, actually coincide. This may be alternatively described as a test that the assumed uniform distance between profiles is zero. The same theory which justifies this hypothesis-testing procedure can be made to justify the confidence interval procedure used in Table 3; in Morrison's notation, the interval is

$$\frac{1}{p} \{j' (\bar{x}_1 - \bar{x}_2) \pm t_{.025} \sqrt{j' S j (1/N_1 + 1/N_2)}\}, \text{ where } j' = (1 \dots 1),$$

$$= \bar{x}_S - \bar{x}_{PS} \pm \frac{t_{.025}}{p} \sqrt{\sum s_{k\ell} \left(\frac{1}{N_S} + \frac{1}{N_{PS}} \right)}, \text{ where}$$

\bar{x}_S = mean of item means for secondary group

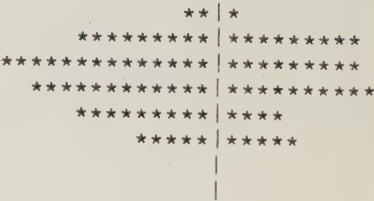
p = number of items

$S = (s_{k\ell})$ = pooled within-group variance-covariance matrix.

TABLE 1
SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
(b) ENGLISH YEAR 4 ADVANCED vs COLLEGE

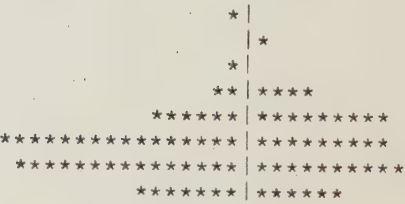
ITEM 1

ITEM 2



ITEM 3

ITEM 4



ITEM 5

ITEM 6

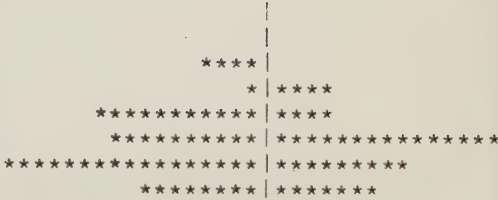
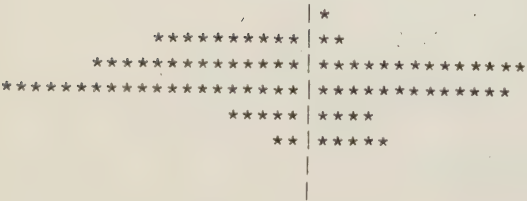
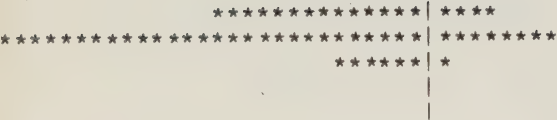


TABLE 1
SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
(d) FRENCH YEAR 5 vs UNIVERSITY

ITEM 1



ITEM 2



ITEM 3



ITEM 4



ITEM 5

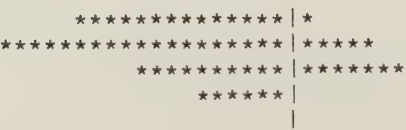


TABLE 1

SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
(d) FRENCH YEAR 5 vs UNIVERSITY (Cont'd)

ITEM 6

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ITEM 7

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ITEM 8

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ITEM 9

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ITEM 10

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TABLE 1
 SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
 (d) FRENCH YEAR 5 vs UNIVERSITY (Cont'd)

ITEM 16

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ITEM 17

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ITEM 18

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ITEM 19

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ITEM 20

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TABLE 1
SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
e) MATHEMATICS (TECHNOLOGY) YEAR 4 vs COLLEGE

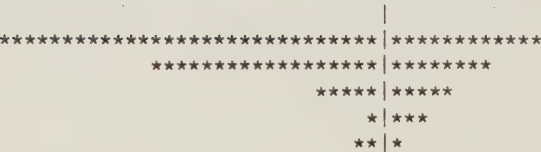
ITEM 1



ITEM 2



ITEM 3



ITEM 4



TABLE 1

SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS

e) MATHEMATICS (TECHNOLOGY) YEAR 4 vs COLLEGE (Cont'd)

ITEM 5

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ITEM 6

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ITEM 7

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ITEM 8

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TABLE 1
SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
(f) MATHEMATICS (BUSINESS) YEAR 4 vs COLLEGE

ITEM 1

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ITEM 2

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ITEM 3

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ITEM 4

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TABLE 1
 SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
 (f) MATHEMATICS (BUSINESS) YEAR 4 vs COLLEGE (Cont'd)

ITEM 5

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ITEM 6

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ITEM 7

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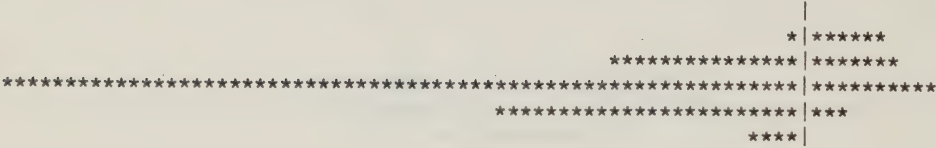
ITEM 8

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TABLE 1
 SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
 (g) MATHEMATICS (FUNCTIONS & CALCULUS) YEAR 5 vs UNIVERSITY

ITEM 1



ITEM 2



ITEM 3



ITEM 4



TABLE 1
 SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
 (g) MATHEMATICS (FUNCTIONS & CALCULUS) YEAR 5 vs UNIVERSITY (Cont'd)

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ITEM 6

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ITEM 7

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ITEM 8

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TABLE 1
SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
(h) MATHEMATICS (ALGEBRA) YEAR 5 vs UNIVERSITY

ITEM 1



ITEM 2



ITEM 3



ITEM 4



TABLE 1
 SECONDARY & POST-SECONDARY ITEM RATING HISTOGRAMS
 (h) MATHEMATICS (ALGEBRA) YEAR 5 vs UNIVERSITY (Cont'd)

ITEM 5

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ITEM 6

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ITEM 7

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ITEM 8

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TABLE 2
 POOLED WITHIN-GROUP INTERITEM CORRELATIONS
 FROM ENGLISH RATING VALIDATION INSTRUMENT

(a) English Year 4 General vs College

ITEM	1	2	3	4	5	6	7	8	9	10	11
1	1.00	0.42	0.15	0.33	0.42	0.30	0.40	0.41	0.02	0.22	0.14
2	0.42	1.00	0.31	0.31	0.55	0.38	0.48	0.39	0.27	0.17	0.18
3	0.15	0.31	1.00	0.43	0.23	0.26	0.16	0.19	0.26	0.26	0.16
4	0.33	0.31	0.43	1.00	0.28	0.33	0.09	0.18	0.17	0.22	0.29
5	0.42	0.55	0.23	0.28	1.00	0.42	0.59	0.43	0.24	0.11	0.17
6	0.30	0.38	0.26	0.33	0.42	1.00	0.31	0.34	0.21	0.15	0.36
7	0.40	0.48	0.16	0.09	0.59	0.31	1.00	0.43	0.23	0.20	0.21
8	0.41	0.39	0.19	0.18	0.43	0.34	0.43	1.00	0.17	0.22	0.12
9	0.02	0.27	0.26	0.17	0.24	0.21	0.23	0.17	1.00	0.26	0.10
10	0.22	0.17	0.26	0.22	0.11	0.15	0.20	0.22	0.26	1.00	0.11
11	0.14	0.18	0.16	0.29	0.17	0.36	0.21	0.12	0.10	0.11	1.00

(b) English Year 4 Advanced vs College

ITEM	1	2	3	4	5	6	7	8	9	10	11
1	1.00	0.41	0.01	0.22	0.46	0.28	0.39	0.29	0.16	0.17	0.06
2	0.41	1.00	0.45	0.28	0.47	0.28	0.36	0.22	0.33	0.20	0.27
3	0.01	0.45	1.00	0.44	0.16	0.16	0.11	0.05	0.23	0.23	0.27
4	0.22	0.28	0.44	1.00	0.30	0.38	0.15	0.26	0.36	0.22	0.20
5	0.46	0.47	0.16	0.30	1.00	0.34	0.36	0.27	0.22	0.26	0.29
6	0.28	0.28	0.16	0.38	0.34	1.00	0.20	0.35	0.36	0.20	0.31
7	0.39	0.36	0.11	0.15	0.36	0.20	1.00	0.28	0.28	0.22	0.15
8	0.29	0.22	0.05	0.26	0.27	0.35	0.28	1.00	0.43	0.16	0.01
9	0.16	0.33	0.23	0.36	0.22	0.36	0.28	0.43	1.00	0.58	0.20
10	0.17	0.20	0.23	0.22	0.26	0.20	0.22	0.16	0.58	1.00	0.32
11	0.06	0.27	0.27	0.20	0.29	0.31	0.15	0.01	0.20	0.32	1.00

(c) English Year 5 vs University

ITEM	1	2	3	4	5	6	7	8	9	10	11
1	1.00	0.19	0.11	0.07	0.37	0.15	0.29	0.06	0.01	0.13	0.08
2	0.19	1.00	0.40	0.39	0.23	0.38	0.19	0.18	0.30	0.14	0.17
3	0.11	0.40	1.00	0.52	0.08	0.36	0.07	0.30	0.20	0.00	0.10
4	0.07	0.39	0.52	1.00	0.13	0.38	0.07	0.26	0.19	0.19	0.35
5	0.37	0.23	0.08	0.13	1.00	0.16	0.30	0.14	0.10	0.21	0.01
6	0.15	0.38	0.36	0.38	0.16	1.00	0.17	0.21	0.43	0.14	0.46
7	0.29	0.19	0.07	0.07	0.30	0.17	1.00	0.18	0.13	0.04	0.06
8	0.06	0.18	0.30	0.26	0.14	0.21	0.18	1.00	0.30	0.06	0.10
9	0.01	0.30	0.20	0.19	0.10	0.43	0.13	0.30	1.00	0.16	0.27
10	0.13	0.14	0.00	0.19	0.21	0.14	0.04	0.06	0.16	1.00	0.29
11	0.08	0.17	0.10	0.35	0.01	0.46	0.06	0.10	0.27	0.29	1.00

TABLE 2

POOLED WITHIN-GROUP INTERITEM CORRELATIONS
FROM FRENCH RATING VALIDATION INSTRUMENT

(d) French Year 5 vs University

ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1.00	0.01	0.02	0.36	0.32	0.38	0.25	0.18	0.34	-0.02	0.10	0.02	0.02	-0.11	0.14	0.29	0.26	-0.03	0.02	0.17
2	0.01	1.00	0.72	0.06	0.16	0.24	0.06	0.31	0.09	0.14	0.02	0.21	0.20	0.40	-0.00	-0.07	0.24	0.15	0.10	0.34
3	0.02	0.72	1.00	0.08	0.13	0.14	0.13	0.24	0.03	0.17	0.01	0.19	0.18	0.35	-0.04	0.06	0.13	0.25	0.16	0.37
4	0.36	0.06	0.08	1.00	0.38	0.23	0.21	0.47	0.18	0.06	0.10	0.11	0.05	-0.10	0.35	0.38	0.08	0.13	0.13	0.32
5	0.32	0.16	0.13	0.38	1.00	0.26	0.40	0.34	0.33	0.24	0.14	0.36	0.25	0.00	0.35	0.19	0.22	0.12	0.13	0.14
6	0.33	0.24	0.14	0.23	0.26	1.00	0.33	0.31	0.30	0.19	0.19	0.44	0.13	0.21	0.16	0.20	0.39	0.10	0.05	0.24
7	0.25	0.06	0.13	0.21	0.40	0.33	1.00	0.09	0.51	-0.03	0.33	0.11	0.01	-0.20	0.35	0.11	0.33	-0.10	0.05	0.47
8	0.18	0.31	0.24	0.47	0.34	0.31	0.09	1.00	-0.11	0.30	0.37	0.40	0.34	0.41	0.20	0.18	0.12	0.42	0.27	0.40
9	0.34	0.09	0.03	0.18	0.33	0.30	0.51	0.11	1.00	0.07	0.09	0.08	-0.26	-0.33	0.35	0.30	0.39	-0.28	0.27	0.23
10	-0.02	0.14	0.17	0.06	0.24	0.19	-0.03	0.30	0.07	1.00	0.12	0.46	0.21	0.32	0.30	0.23	0.22	0.33	0.30	0.03
11	0.10	0.02	0.01	0.10	0.14	0.19	0.33	0.37	0.09	0.12	1.00	0.20	0.13	0.00	0.17	0.17	0.37	0.12	0.12	0.21
12	0.02	0.21	0.19	0.11	0.36	0.44	0.11	0.40	0.08	0.46	0.20	1.00	0.32	0.44	0.12	0.14	0.21	0.39	0.11	0.30
13	0.02	0.20	0.18	0.05	0.25	0.13	0.01	0.34	-0.26	0.21	0.13	0.32	1.00	0.51	-0.18	-0.01	0.26	0.38	0.22	0.07
14	-0.11	0.40	0.35	-0.10	0.00	0.21	-0.20	0.41	-0.33	0.32	0.00	0.44	0.51	1.00	-0.14	-0.16	0.15	0.50	0.23	0.15
15	0.14	0.00	-0.04	0.35	0.35	0.16	0.35	0.20	0.35	0.30	0.17	0.12	-0.18	-0.14	1.00	0.47	0.18	0.00	0.21	0.29
16	0.29	0.07	0.06	0.38	0.19	0.20	0.11	0.18	0.30	0.23	0.17	0.14	-0.01	0.16	0.47	1.00	0.41	0.03	0.08	0.10
17	0.26	0.24	0.13	0.08	0.22	0.39	0.33	0.12	0.39	0.22	0.37	0.21	0.26	0.15	0.18	0.41	1.00	0.08	0.01	0.23
18	-0.08	0.15	0.25	0.13	0.12	0.10	-0.10	0.42	-0.28	0.33	0.12	0.39	0.38	0.50	0.00	0.03	0.08	1.00	0.32	0.26
19	0.02	0.10	0.16	0.13	0.13	0.05	0.05	0.27	-0.27	0.30	0.12	0.11	0.22	0.23	0.21	0.08	0.01	0.32	1.00	0.29
20	0.17	0.34	0.37	0.32	0.14	0.24	0.47	0.40	0.29	0.03	0.21	0.30	0.07	0.15	0.29	0.10	0.23	0.26	0.29	1.00

TABLE 2

POOLED WITHIN-GROUP INTERITEM CORRELATIONS
FROM MATHEMATICS RATING VALIDATION INSTRUMENT

(e) Mathematics (Technology) Year 4 vs College

ITEM	1	2	3	4	5	6	7	8
1	1.00	-0.04	-0.41	-0.31	0.45	0.29	-0.03	-0.26
2	-0.04	1.00	0.43	0.41	-0.15	0.08	0.42	0.33
3	-0.41	0.43	1.00	0.67	-0.37	-0.19	0.27	0.45
4	-0.31	0.41	0.67	1.00	-0.33	-0.21	0.30	0.39
5	0.45	-0.15	-0.37	-0.33	1.00	0.33	-0.02	-0.06
6	0.29	0.08	-0.19	-0.21	0.33	1.00	0.22	0.00
7	-0.03	0.42	0.27	0.30	-0.02	0.22	1.00	0.33
8	-0.26	0.33	0.45	0.39	-0.06	0.00	0.33	1.00

(f) Mathematics (Business) Year 4 vs College

ITEM	1	2	3	4	5	6	7	8
1	1.00	0.55	-0.11	0.53	0.27	-0.24	0.40	0.02
2	0.55	1.00	-0.34	0.77	0.43	-0.61	0.64	0.00
3	-0.11	-0.34	1.00	-0.42	0.10	0.61	-0.36	0.23
4	0.53	0.77	-0.42	1.00	0.47	-0.57	0.60	0.00
5	0.27	0.43	0.10	0.47	1.00	-0.13	0.26	0.04
6	-0.24	-0.61	0.61	-0.57	-0.13	1.00	-0.56	0.25
7	0.40	0.64	-0.36	0.60	0.26	-0.56	1.00	0.06
8	0.02	0.00	0.23	0.00	0.04	0.25	0.06	1.00

(g) Mathematics (Functions & Calculus) Year 5 vs University

ITEM	1	2	3	4	6	7	8
1	1.00	0.33	0.14	0.24	0.35	0.42	0.40
2	0.33	1.00	-0.52	0.28	-0.63	0.38	0.70
3	0.14	-0.52	1.00	0.21	-0.36	0.00	-0.48
4	0.24	0.28	0.21	1.00	0.28	0.41	0.04
6	0.35	0.63	-0.36	0.28	1.00	0.57	0.59
7	0.42	0.38	0.00	0.41	0.57	1.00	0.39
8	0.40	0.70	-0.48	0.04	0.59	0.39	1.00

(h) Mathematics (Algebra) Year 5 vs University

ITEM	1	2	3	4	5	6	8
1	1.00	0.00	-0.05	-0.44	0.27	-0.60	-0.56
2	0.00	1.00	0.50	-0.44	-0.61	-0.10	-0.11
3	-0.05	0.50	1.00	-0.41	-0.46	0.09	-0.22
4	-0.44	-0.44	-0.41	1.00	0.75	0.32	0.49
5	0.27	-0.61	-0.46	0.75	1.00	0.38	0.35
6	0.60	-0.10	0.09	0.32	0.38	1.00	0.36
8	0.56	-0.11	-0.22	0.49	0.35	0.36	1.00

TABLE 3

ITEM MEANS AND ITEM DIFFERENCES

(a) ENGLISH - YEAR 4 GENERAL vs COLLEGE

Item	1	2	3	4	5	6	7	8	9	10	11
Sec. mean	1.45	3.13	6.00	5.87	3.13	5.55	2.05	3.90	5.84	5.24	5.45
Post-sec. mean	1.24	2.65	5.59	5.05	2.92	5.38	1.81	3.57	5.32	4.54	5.16
Difference	0.21	0.48	0.41	0.82	0.21	0.17	0.24	0.33	0.52	0.70	0.29

$N_S = 38, N_{PS} = 37$

Test for parallel profiles: $F = 0.710$ (10, 64 d.f.) not sig.

95% confidence limits for uniform distance between item means:
 0.40 ± 0.33

(b) ENGLISH - YEAR 4 ADVANCED vs COLLEGE

Item	1	2	3	4	5	6	7	8	9	10	11
Sec. mean	0.96	2.71	5.58	5.23	2.58	5.27	1.73	3.54	5.27	5.60	4.96
Post-sec. mean	1.24	2.65	5.59	5.05	2.92	5.38	1.81	3.57	5.32	4.54	5.16
Difference	-0.28	0.06	-0.01	0.18	0.34	-0.11	-0.08	-0.03	-0.05	0.06	-0.20

$N_S = 48, N_{PS} = 37$

Test for parallel profiles: $F = 0.56$ (10, 74 d.f.) not sig.

95% confidence limits for uniform distance between item means:
 -0.07 ± 0.31

TABLE 3 (Cont'd)
ITEM MEANS AND ITEM DIFFERENCES

(c) ENGLISH - YEAR 5 vs UNIVERSITY

Item	1	2	3	4	5	6	7	8	9	10	11
Sec. mean	0.96	2.44	5.44	4.81	2.29	5.35	1.19	3.63	5.04	4.42	4.94
Post-sec. mean	0.68	2.14	4.77	4.50	1.77	4.54	0.82	3.41	4.45	4.14	4.23
Difference	0.28	0.30	0.67	0.31	0.52	0.81	0.37	0.22	0.59	0.28	0.71

$N_S = 48$, $N_{PS} = 22$ Test for parallel profiles: $F = 0.526$ (10, 59 d.f.) not sig.
95% confidence limits for uniform distance between item means: 0.46 ± 0.35

(d) FRENCH - YEAR 5 vs UNIVERSITY^a

Item	1	2	3	4	5	6	7	8	9
Sec. mean	0.84	2.86	2.93	2.02	1.21	2.28	0.63	2.35	0.28
Post-sec. mean	0.75	2.75	3.00	2.17	1.50	1.67	0.67	2.33	0.25
Difference	0.09	0.11	-0.07	-0.14	-0.29	0.61	-0.04	0.02	0.03

Item	11	12	13	14	15	16	17	18	19	20
Sec. mean	0.42	3.14	3.40	3.60	1.07	1.77	1.86	3.67	3.28	2.79
Post-sec. mean	0.58	3.17	3.25	3.58	1.58	1.42	1.58	3.58	3.58	2.67
Difference	-0.16	-0.03	0.15	0.02	-0.51	0.35	0.28	0.09	-0.30	0.12

$N_S = 43$, $N_{PS} = 12$ Test for parallel profiles: $F = 0.786$ (18, 36 d.f.) not sig.
95% confidence limits for uniform distance between item means: 0.02 ± 0.25

^a Because the distributions for the 10th item (Number 9 on the Rating Form) were markedly non-normal, that item is excluded from this analysis

TABLE 3 (Cont'd)
ITEM MEANS AND ITEM DIFFERENCES

(e) MATHEMATICS (TECHNOLOGY) - YEAR 4 vs COLLEGE

Item	1	2	3	4	5	6	7	8
Sec. mean	4.30	3.23	1.70	2.09	4.18	3.82	2.93	2.88
Post-sec. mean	3.79	3.07	2.07	2.52	4.10	3.69	2.90	2.90
Difference	0.51	0.16	-.37	0.43	0.08	0.13	0.03	-.02

$N_S = 56$ $N_{PS} = 29$ Test for parallel profiles: $F = 2.360$ (7, 77 d.f.)

Sig. at 5% level. Confidence limits not computed since profiles not parallel.

(f) MATHEMATICS (BUSINESS) - YEAR 4 vs COLLEGE

Item	1	2	3	4	5	6	7	8
Sec. mean	2.78	1.87	3.59	2.83	2.87	3.96	2.61	3.39
Post-sec. mean	2.86	2.32	3.68	2.82	2.91	3.86	2.54	3.36
Difference	-.09	-.45	-.09	0.02	-.04	-.10	0.07	0.03

$N_S = 54$ $N_{PS} = 22$ Test for parallel profiles: $F = 1.068$ (7, 68 d.f.)

not sig.

95% confidence limits for uniform distance between item means:

-0.06 \pm 0.20

TABLE 3 (Cont'd)
ITEM MEANS AND ITEM DIFFERENCES

(g) MATHEMATICS (FUNCTIONS AND CALCULUS) - YEAR 5 vs UNIVERSITY

Item	1	2	3	4	6	7	8
Sec. mean	3.10	2.61	3.97	3.44	3.13	3.18	2.77
Post-sec. mean	2.57	2.22	3.65	2.96	2.61	2.61	2.30
Difference	0.54	0.39	0.32	0.48	0.52	0.57	0.46

$N_S = 77$ $N_{PS} = 23$ Test for parallel profiles:

$F = 0.455$ (6, 93 d.f.) not sig.

95% confidence limits for uniform distance between item means:

$$0.47 \pm 0.23$$

(h) MATHEMATICS (ALGEBRA) - YEAR 5 vs UNIVERSITY

Item	1	2	3	4	5	6	8
Sec. mean	2.73	4.22	3.78	2.16	1.49	3.02	2.44
Post-sec. mean	2.60	3.60	3.80	2.10	1.60	2.80	1.90
Difference	0.13	0.62	-.02	0.56	-.11	0.22	0.54

$N_S = 45$ $N_{PS} = 10$ Test for parallel profiles:

$F = 1.20$ (6, 48 d.f.) not sig.

95% confidence limits for uniform distance between item means:

$$0.21 \pm 0.28$$

SECONDARY - POST-SECONDARY INTERFACE STUDYNATURE OF PROGRAMSITEM RATING SCALEENGLISH

In Section IV of our questionnaire, we ask you to use a response key to rate the average level of competence of your students. It is important for us to find out whether instructors at different institutional levels use the response categories to mean the same thing. Therefore, we are asking each of the respondents to assess the level of student achievement indicated by the questions and/or answers which follow.

Use the response key to fill in an appropriate number in the box to the right of each item. Keep in mind that this response key is to cover the range of competence from the beginning of Grade XII to the end of a first-year course at a College of Applied Arts and Technology.

RESPONSE KEY

0	1	2	3	4	5	6	7
↓	↓	↓	↓	↓	↓	↓	↓
No Competence	Minimal Competence		Moderate Competence		Competence in varied situations, some originality		Mastery, competence in high level creative situations

Please rate the overall quality of the following examples of student writing, according to the response key given above. In forming your total impression, you may wish to take into account such criteria as:

- a) the use of idiomatic English and proper grammar, spelling, vocabulary, and punctuation;
- b) the ability to write sentences and paragraphs that follow logically from one another;
- c) the ability to write fluently, clearly and concisely;
- d) quality of argument;
- e) originality.

Please feel free to use any other criteria which you consider appropriate. (We realize that the subject matter in these responses may not be related directly to your courses. Please discount this factor in making your assessment.)

1. (SUBJECT: Eliot's "Journey of the Magi")

Response: Unlike in the actual bible, these wisemen of Elliots were not happy or overjoyed, they were ill at ease, Melancholy, and very unsure of what was the future situation. The wisemen were fill with apprehension now that they were enlightenment as a witness to the birth. Something strange and new had occured, no longer were they satisfied with their life. Material posseisoin and wealth were of little consequence now, as they had been at the start of the poem. Did the wisemen witness a Birth or a Death, a death of one erea, and the Birth of a new one.



2. (SUBJECT: Shirley Jackson, "The Lottery")

Response: The lottery was a tradion that was followed even though the villagers had forgotten the actual reason for it. The black box used in the ceremony actually typifies the tradional ceremony itself. The people had even forgotten when and where the box had come from. The present box had been made with pieces of the box that had preceded it, thus bringing to mind conotations of religious like value the box had. The tradition of the lottery was also religiously held up.



3. (SUBJECT: Coleridge, "The Rime of the Ancient Mariner")

Response: This harmony, then, is restored in limited form to the Mariner as he gazes into the rotting sea. There he beholds the water snakes and admires their "silvery flashing" beauty. At once he feels a surging of love, and finds he is able to pray. A limited form of redemption follows as the Albatross falls from his neck.

Coleridge, by having the Mariner's admiration of nature as the saving force, is pointing out one of the basic Romatic ideals: contemplation of nature is almost a requirement for harmony and peace. The fact that he is able to look at the rotting sea and at what had previously been for him "slimy things", shows a broadness of vision essential to the Romantic ideal: contemplation and admiration are not always reserved for the outwardly beautiful in life.



4. (SUBJECT: Yeats, "Among Schoolchildren")

Response: The speaker dismisses philosophy as an answer; Aristotle was reduced to being a tutor and spanker of Alexander the Great, and Pythagoras was only "fingering upon the fiddle or the strings." These great men were reduced to trivial lives too, and even they became "old clothes upon old sticks to scare birds away." But if a moral life doesn't diminish the horror of death, the answer doesn't lie in the worship of the eternal either. Just as aging babies must break mother's hearts, the hearts of nuns are broken too by worship of the eternal "Presences". Man's mortality is rudely brought home by the Presences which are "self born, mockers of man's enterprises."

5. (SUBJECT: Shakespeare, Twelfth Night)

Response: Count Orsino's love for Olivia is quite sickening. He describes his love for her in such large capacities that he is quite willing to give her the sun, stars and whole universe. Shakespeare is poking fun at the English tradition of courtship; i.e., unrequited love. There is no need for Orsino to carry on in such a manner and the audience hopefully gets Shakespeare's message.

Olivia's 7 year mourn for her dead brother is not a very significant factor once the play gets going but nevertheless it makes fun of the excessive lamenting done in literature at the time. Things such as unrequited love and passion were common and perhaps ridiculous.

Other factors such as Sir Toby Belches drinking and Sir Andrew's stupidity are presented in excess for the comic relief effect at the very end of the play.



6. (SUBJECT: Shakespeare, King Lear)

Response: Tragedy poses questions about the ultimate things of life: whether there is order or disorder in the cosmos, or whether there is some cause and effect relationship between actions and their conclusions.

King Lear suggests that there is no superseding cosmic power, or if so that the gods must be cruel and malevolent. Lear has suffered madness and the cruel storm on the heath. He has been cast out by his own daughters and must stand naked and alone against the elements before he can know who he is and be able to understand human nature. He comes to self-knowledge and learns what real love is. Having broken the bonds of parenthood, Kingship and friendship out of foolishness, he realizes his mistakes and comes to terms with the fact that there are "hard-hearts: in the world, and that they are his own daughters.

Cordelia, whom he had previously rejected, is united with her father near the end of the play. Her loyal and faithful love gives her father the strength to wake from his sleep of madness. Order seems to return as the evil daughters, Goneril and Regan die and Lear regains sanity and his most precious daughter. The respite is only temporary.

Cordelia's death, by hanging implies an imbecile universe. The truest and most honest person of all should not die. Lear asks why mere animals should have life and she should not. There is no answer. There is no just and benevolent God, no cause and effect when the best die. □

7. (SUBJECT: Shakespeare, King Lear)

Response: All the way throughout this novel innocent people were put through terrible and meaningless ordeals that in no way were deserving. For what purpose did poor Gloucester deserve his suffering. No where in the book King Lear did poor Gloucester do anything to deserve the wretched treatment that was incurred upon him in this novel. Goneril, the daughter who actually loved her father (Lear) the most is severely chastised throughout the play simply because her stupid niece father could not understand the true meaning of her words of love to him.

Goneril's death by hanging was so close to be saved -- it may be assumed that the Gods didn't want to stop it as someone so true should only be with them. The ending of this great tragedy is to point out that the convictions portrayed through this novel should not be counted on. □

8. (SUBJECT: Shirley Jackson, "The Lottery")

Response: This passage is an example of Jackson's frequent hints at something of more import that originally realized. It is an example of Jackson filling in the story with a background that we don't quite understand yet accept without considering. Only upon reflection of the whole story do we realize how much she really has told us, before the startling conclusion. She mentions the age of the box, used before the oldest man was born and hence, gives it a timeless quality. It is also mentioned that the box was made from a preceding box and with these two points we realize we are dealing with a tradition of year ago that holds a rather sacred importance. The people's hesitancy to upset the tradition of the old box, also suggests a reverence and possibly fear of something which exists in the box as a symbol. Though the fear, reverence and horror of the people's relation to the box is not initially read that way, after the conclusion one goes back and is surprised by how much was really said about it. We find many more possibilities in the sentences she so passively drops and realize what she might be saying. The fantastic subtleties and slight details grow and become the base for the conclusion, and only upon completion do we realize how important an apparently simple comment may have. (She crafts here sentences to include definite details yet disguises them to only seem simple comments or observations). ☐

9. (SUBJECT: Marvell, "To His Coy Mistress")

Response: Marvell uses the Petrarchan convention of paying elaborate compliments to the lady while at the same time making subtle references to her coyness. The tone of the poem is comic initially but becomes more intense as it progresses. Marvell uses syllogisms to organize his poem. In the first stanza he toys with the notion of a world in which time is infinite, and in the second he suggests that in reality this cannot be so. The concluding stanza offers an invitation to love in the carpe diem tradition of seizing the day.

In the third stanza the urgency of the images suggests Marvell's awareness of time. For example, he speaks of the lovers as "amorous birds of prey". Time is also referred to in terms of animal imagery which gives the feeling that it could come along and devour the lovers at any time. The most intense image Marvell uses is of lovers rolled up "into one ball" to break through the barriers of time. ☐

10. (SUBJECT: Coleridge, "The Rime of Ancient Mariner")

Response: The ship sails until the mariner kills the albatross, but after the crime the ship is driven to the South Pole, and strange events begin. The ship is becalmed and all of the men, save the mariner, are stricken dead. A spectre ship appears and the Mariner, despairing of his situation, curses the dead crew.

But in a moment of revelation he spies the happy sparkling of the sea snakes as they writhe in the ocean and it is at this moment that he praises the creatures that he had previously found so abhorrent. "A spring of love gushes from his heart" and he finds himself able to pray -- something which had been an impossibility up to this point. This then is the crucial turning point of the poem. The mariner's dead albatross, which had been hung around his neck as a sign of his sin, is released and sinks into the ocean.



11. (SUBJECT: Tragedy and Comedy)

Response: In modern drama we tend to identify with the plight of the protagonist because his experiences and troubles often parallel our own. Values in society have changed. Now any excessive courage or virtue or nobility is suspect: we wonder what the person will get out of it.

If the protagonist rejects society and its values, then he is to us a hero of sorts. There is a recurrent theme of isolation in modern literature which may be exemplified by the situation of Ephraim Cabot at the end of Desire Under the Elms. He retreats to the barn, abandoned and betrayed by those closest to him, something which we have all felt to some extent in our own lives and which evokes our sympathies for the protagonist.



SECONDARY - POST-SECONDARY INTERFACE STUDYNATURE OF PROGRAMSITEM RATING SCALEFRENCH

In Section IV of our questionnaire, we ask you to select a number from a response key to rate the average level of competence of your students. It is important for us to find out whether instructors at different institutional levels use the response categories to mean the same thing. Therefore, we are asking each respondent to assess the level of student achievement indicated by the questions and/or answers which follow.

In order to provide a basis for comparing the courses which constitute the secondary - post-secondary interface, we would like you to consider the courses on each side of the interface as a unit and to interpret the range of competence in the response key as covering both Grade XIII and first-year university.

Consider each item which follows as being completely independent of the others (presumably done by different students). Use the response key to fill in an appropriate number in the box to the right of each item.

RESPONSE KEY

0	1	2	3	4
↓	↓	↓	↓	↓
No Competence	Minimal Competence	Moderate Competence	Competence in varied situations, some originality	Mastery, competence in high level, creative situations

1. Question Translate -

After resting a week in Italy, we visited France."

Answer - Après restant une semaine dans Italie nous
avons visité France.



2. Lisez le passage suivant; ensuite répondez aux questions en anglais.

"J'ai dû dormir longtemps, et d'un profond sommeil; mais soudain je fus réveillé en sursaut par la chute d'un corps pesant abattu sur le mien, et en même temps, je reçus sur la figure, sur le cou, sur la poitrine un liquide brûlant qui me fit pousser un hurlement de douleur. Et un bruit épouvantable comme si un buffet chargé de vaisselle se fût écroulé m'entra dans les oreilles.

J'étouffais sous la masse tombée sur moi, et qui ne remuait plus. Je tendis les mains, cherchant à reconnaître la nature de cet objet. Je recontraï une figure, un nez, des favoris. Alors, de toute ma force, je lançai un coup de poing dans ce visage. Mais je reçus immédiatement une grêle de gifles qui me firent sortir, d'un bond, de mes draps trempés, et me sauver, en chemise, dans le corridor, dont j'apercevais la porte ouverte."

Question (a)

Qu'est-ce qui a réveillé l'auteur de ce passage (2 details)?

Answer (a)

----- a body

----- a boiling liquid

Question (b)

Pourquoi le narrateur est-il sorti?

Answer (b)

-----because of the blows raining down upon him.

3. Question

Ecrivez au féminin pluriel

grand, petit, vert, blanc, beau, sec, vieux, gros, frais.

Answer

grandes, petites, vertes, blanches, belles, seches,
vieilles, grosses, fraisses.



4. Question

Ecrivez au discours indirect:

Hier, Jean a dit: "demain, Jacques, tu feras des courses pendant que tes soeurs rendront visite à leurs amies."

Par exemple: Hier, Jean a dit qu'aujourd'hui Jacques ...

Answer

Hier, Jean a dit qu'aujourd'hui Jacques fera des courses pendant que ses soeur rendent visite à leurs amies.

5. Question

Translate into English:

Elles se sont bien amusées à lire des romans policiers.

Answer

They amused themselves well by reading police novels.

6. Question

Choisissez l'expression qui complète la phrase:

Combien d'argent gagne-t-il _____ ?

Answer

- A. la semaine
- B. par semaine
- C. une semaine
- D. par la semaine

7. Question

Quand Voltaire a-t-il vécu et quelle est sa contribution à son époque?

Answer

Au dix-huitième siècle. Il était dans le groupe qui a développé les idées de la liberté.

8. Question

Indiquez la phrase anglaise qui exprime le sens de la phrase française.

"Ils se promenaient au su et au vu de tous."

Answer

- A. They promised to see everything.
- B. They were strolling and everyone knew about it.
- C. They were strolling about in sight of everyone.
- D. They promised to see about her cough.



9. Question

Exprimez autrement en français

Il a dormi sur ses deux oreilles.

Answer

Il a dormi profondément. ☐

10. Question

Quand Guy de Maupassant a-t-il vécu et quelle est sa contribution à la littérature française?

Answer

Il a écrit les plus grands tragédies de la littérature française. ☐

11. Question

Translate into French:

"If John arrives on time this evening, we'll go to the movies with him."

Answer

Si Jean arrive à temps ce soir, nous irons au cinéma avec lui. ☐

12. Question

Ecrivez au discours indirect: Hier Jean a dit: "demain Jacques, tu feras des courses pendant que tes soeurs rendront visite à leurs amies:

Par exemple: Hier, Jean a dit qu'aujourd'hui Jacques ...

Answer

Hier, Jean a dit qu'aujourd'hui Jacques ferait des courses pendant que ses soeurs rendraient visite à leurs amies. ☐

13. Question

Translate into English

"Elles se sont bien amusées à lire des romans policiers.

Answer

They had a good time reading detective stories. ☐

14. Question

Choisissez la phrase correcte:

1. S'il ferait beau, je me promènerai.
2. S'il faisait beau, je me promènerais.
3. S'il ferait beau, je me promènerais.
4. S'il faisait beau, je me promènerai.

Answer

4 ☐

15. Question

Répondez affirmativement:

Ce livre n'est pas à toi, n'est-ce pas?

Answer

Ou, ce livre est à moi.

16. Question

Translate into English

Il faut que vous passiez ces examens et que vous obteniez un grand succès.

Answer (a)

It is necessary that you pass these examinations and that you obtain a great success.



Answer (b)

You must write these examinations and pass them with distinction.

17. Question

Lisez le passage suivant; ensuite répondez à la question:

(Le jeune Rousseau, malade, exilé de son pays, la Suisse, a envoyé à Voltaire son livre où il dénonce les sociétés civilisées et fait l'éloge de la vie simple et primitive de "l'homme naturel". Voltaire lui répond:) J'ai reçu, monsieur, votre nouveau livre contre le genre humain, je vous en remercie ... On n'a jamais employé tant d'esprit à vouloir nous rendre bêtes; il prend envie de marcher à quatre pattes, quand on lit votre ouvrage. Cependant, comme il y a plus de soixante ans que j'en ai perdu l'habitude, je sens malheureusement qu'il m'est impossible de la reprendre, et je laisse cette allure naturelle à ceux qui en sont plus dignes que vous et moi. Je ne peux non plus m'embarquer pour aller trouver les sauvages du Canada; premièrement, parce que les maladies dont je suis accablé me retiennent auprès du plus grand médecin de l'Europe, et que je ne trouverais pas les mêmes secours chez les Missouris; secondement, parce que la guerre est portée dans ces pays-là, et que les exemples de nos nations ont rendu les sauvages presque aussi méchants que nous. Je me borne à être un sauvage paisible dans la solitude que j'ai choisie auprès de votre patrie, où vous devriez être ...

Quel est l'intérêt de ce passage? (répondez en français)

Answer

L'intérêt de ce passage est surtout l'humour et l'ironie. Voltaire se moque de Rousseau. D'abord, il détruit l'idée principale de Rousseau quand il dit: "votre nouveau livre contre le genre humain"; et il "remercie" Rousseau du livre, mais Voltaire insinue qu'il pardonne Rousseau de lui avoir envoyé une insulte. Ensuite, Voltaire joue sur des mots: "on n'a jamais employé tant d'esprit ...", mais Voltaire ne croit pas vraiment que Rousseau a beaucoup "d'esprit", et le mot "bêtes" veut dire animal et aussi stu pide. Quand Voltaire dit: "il prend envie de marcher à quatre pattes", on peut imaginer la furie de Rousseau, qui ne voulait pas dire ça. Dans "je laisse cette allure naturelle à ceux qui en sont plus dignes que vous et moi", le mot "naturelle" est imité de Rousseau, mais la signification est déformée: Voltaire dit que Rousseau est un bébé, et il l'invite à être "plus digne", comme Voltaire. Maintenant, Voltaire dit le contraire de Rousseau: l'homme "naturel" n'est pas heureux. Il y a la guerre chez eux comme en Europe, et ils n'ont pas de médecins quand ils sont malades. Voltaire est cruel pour Rousseau et il ne devrait pas dire qu'il est "auprès du plus grand médecin de l'Europe ... auprès de votre patrie, où vous devriez être" quand Rousseau est lui-même malade et exilé. C'est trop méchant!

18. Question

Translate into French.

"After resting a week in Italy, we visited France.

Answer

Après s'être reposé une semaine en Italie, nous avons visité la France.



SECONDARY - POST-SECONDARY INTERFACE STUDY

NATURE OF PROGRAMS

ITEM RATING SCALE

(Mathematics: Grade XII - First Year College of Applied Arts & Technology)

In Section IV of our questionnaire we ask you to use a response key to rate the average level of competence of your students. It is important for us to find out whether instructors at different institutional levels use the response categories to mean the same thing.

For this purpose we have selected some representative test questions from the interface mathematics courses being studied. The items vary in level of difficulty and have been chosen from content areas considered central to the courses. They have been grouped in two sections as follows:

1. Technology
2. Business

Please choose the section to which your course belongs, and using the abbreviated 'levels' rating scale shown below (the expanded scale is available on request) indicate opposite each question the level of competence which you judge is displayed by a student who is able to answer that question correctly. Remember that the response scale was designed to cover the two year period across the interface between Grade XII and first year College of Applied Arts and Technology.

'LEVELS' RATING SCALE FOR USE IN MATHEMATICS

- 0 - No Knowledge
- 1 - Descriptive knowledge only
- 2 - Elementary quantitative knowledge and skill:
- 3 - Working grasp: able to do standard exercises and problems
- 4 - Thorough understanding: can solve a wide range of problems, and generalize
- 5 - Complete mastery: understands theoretical base, and limitations of applicability, can solve non-routine problems of all types

If you wish to respond to the questions in the other section, please feel free to do so. In particular, if you are a Grade XII instructor, it will probably be best for you to respond to both sections, but if your course is structured towards Technology or Business, you need respond only to the appropriate section.

Also, make any other comments which you feel might be useful.

Level of Competence
Represented by
Correct Answer

I. Technology

1. The electric current as a function of the time for a particular circuit is given by

$i = 8e^{-20t} (\sqrt{3} \cos 10t - \sin 10t)$. Find the time in seconds when the current is first zero.

☐

2. Sketch the following and find where the curve intersects the x axis:

$$4x^2 + 4x - 3 = y$$

☐

3. Which of the following equations is quadratic?

(a) $4x = 20$ (b) $2x + 6y = 3$ (c) $3x^2 - 9x = 0$

☐

4. Write in scientific notation the number 54793.1

☐

5. An object with a mass of 1000 gm slides down a long inclined plane. The effective force of gravity is 4×10^7 dynes, and the motion is retarded by a force numerically equal to the velocity. If the object starts from rest, what is its velocity (in cm/sec) 4 seconds later?

☐

6. A cistern can be filled by two pipes together in 30 minutes. If the larger pipe takes 12 minutes less than the smaller to fill the cistern, find in what time it will be filled by each pipe singly.

☐

7. The mass of the earth is 13.1×10^{24} lbs. A gram of mass is 0.002205 lb. Find the mass of the earth in grams.

☐

8. Find the period of
 $y = 3 \sin 5x$

☐

(Mathematics: Grade XII - First Year College of Applied Arts & Technology)

Level of Competence
Represented by
Correct Answer

II. Business

1. A piece of wire is 18 ft. long. Where must it be cut for one piece to be 3 ft. longer than the other piece? ☐
2. True or false: $\frac{3}{80}$ is a percentage. ☐
3. The manufacturer of a disk-shaped machine part of radius 1.00 in. discovered that he could prevent taking a loss in its production if the amount of material used in each was reduced by 20%. If the thickness remains the same, by how much must the radius be reduced in order to prevent a loss? ☐
4. Solve the equations:
 $x - y = 3$
 $2x + y = 9$ ☐
5. Compute without the use of a calculator
 $\frac{(0.0732)(6700)}{0.00134}$, and express your answer in scientific notation correct to one decimal place. ☐
6. The Pension Board of a certain Board of Education invests the funds of its contributors in bonds, of which there are six forms of investment available. These are city bonds, labeled A_1 for preferred and A_2 for common; government bonds, labeled B_1 for preferred and B_2 for common; speculative bonds, labeled C_1 for preferred and C_2 for common. The yield from each type of investment is: ☐

Type:	A_1	A_2	B_1	B_2	C_1	C_2
Yield:	3%	2½%	3½%	4%	½%	4½%

The Board is restricted in its investment policy, by law, in the following way: (a) Investments in bonds of type A must not be less than 40% of total investment, and (b) Investments in bonds of types B and C shall not be more than 35% of total investment, for either type. Determine the investment program which will bring the maximum yield.

(Mathematics: Grade XII - First Year College of Applied Arts & Technology)

Level of Competence
Represented by
Correct Answer

Business (Cont'd)

7. Solve the Equation

$$x^2 = 9$$

☐

8. A sum of money invested at 4 per cent per annum compound interest, reckoned annually, amounted to \$270.40 in 2 years. How much was invested?

☐

How many more years must elapse before the amount exceeds twice the sum originally invested?

COMMENTS:

NATURE OF PROGRAMSITEM RATING SCALE

(Mathematics: Grade XIII - First Year University)

In section IV of our questionnaire we ask you to use a response key to rate the average level of competence of your students. It is important for us to find out whether instructors at different institutional levels use the response categories to mean the same thing.

For this purpose we have selected some representative test questions from the interface mathematics courses being studied. The items vary in level of difficulty and have been chosen from content areas considered central to the courses. They have been grouped in three sections, as follows:

1. Functions and Calculus
2. Algebra
3. Probability and Statistics

Please choose the section to which your course belongs and using the abbreviated 'levels' rating scale shown below (the expanded scale is available on request) indicate opposite each question the level of competence which you judge is displayed by a student who is able to answer that question correctly. Remember that the response scale was designed to cover the two year period across the interface between Grade XIII and first year University.

'LEVELS' RATING SCALE FOR USE IN MATHEMATICS

- 0 - No Knowledge
- 1 - Descriptive knowledge only
- 2 - Elementary quantitative knowledge and skill:
- 3 - Working grasp: able to do standard exercises and problems
- 4 - Thorough understanding: can solve a wide range of problems, and generalize
- 5 - Complete mastery: understands theoretical base, and limitations of applicability, can solve non-routine problems of all types

If you wish to respond to the questions in either or both of the other sections, please feel free to do so. In particular, if you are a Grade XIII instructor who includes some probability and statistics in your course, it would be very helpful if you would respond to that section as well.

Also, make any other comments which you feel might be useful.

Level of Competence
Represented by
Correct Answer

I. Functions and Calculus

1. For $0 \leq x \leq 2\pi$, sketch $y = \frac{1}{3} \cos 2\left(x - \frac{\pi}{4}\right)$ ☐

2. Find an antiderivative of $\sin x$. ☐

3. A man wishes to get from point A to point B, these points being diametrically opposite each other on the shores of a circular pond. The man can row $1\frac{1}{2}$ miles per hour and walk 5 miles per hour.

(a) If there is a boat available at A, what combination of rowing and walking will take him to B in the least possible time?

(b) Discuss the problem when the rowing and walking speeds are, respectively, \underline{u} and \underline{v} miles per hour, for $u < v$, $u = v$, and $u > v$. ☐

4. Find an antiderivative of $e^x \sin x$. ☐

5. Which of these is a trigonometric function?

(a) $f: x \rightarrow x^3, x \in \mathbb{R}$

(b) $f: x \rightarrow \sin x, x \in \mathbb{R}$ ☐

(c) $f: x \rightarrow 3x - 2, x \in \mathbb{R}$

6. Find $\frac{dy}{dx}$ if $y = \sqrt{\frac{1+x}{x}}$ ☐

7. Find $\frac{d^2y}{dx^2}$ if $3x^2 + 2x - 4y^3 = 8$ ☐

8. Find the minimum value of $f(x) = x^2 + 3$ by any method. ☐

(Mathematics: Grade XIII - First Year University)

Level of Competence
Represented by
Correct Answer

II. Algebra

1. Solve $\begin{pmatrix} -3 & 2 \\ -13 & -9 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$

☐

2. State the geometrical relation between two points in the Z-plane which represent numbers whose ratio is real. If the point Z moves so that $Z^2/(Z-1)$ is real, show geometrically or analytically that the locus of Z consists of the real axis and a circle.

☐

3. Prove that there is one and only one quadratic equation for which the sum of the roots is 3 and the sum of the cubes of the roots is 63.

☐

4. Solve $x^2 - 2x - 3 = 0$

☐

5. Is "3x is greater than 5" an equation?

☐

6. Express in the form $a + bi$:

$$\frac{(3 + 2i)(-4 - 3i)}{(-1 + i)^2(5 + 2i)}$$

☐

7. Do the eigenvectors of $\begin{pmatrix} 5 & 0 & 1 \\ 0 & -1 & 0 \\ 1 & 0 & 5 \end{pmatrix}$ span R^2 ?

☐

8. Find AB if

$$A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \text{ and } B = \begin{pmatrix} -2 & 3 \\ 5 & 0 \end{pmatrix}$$

☐III. Probability and Statistics

1. The Stanford-Binet I.Q. test is scored so that the I.Q. score of a randomly chosen individual has a normal distribution with a mean of 100 and standard deviation of 16. What percentage of the population would you expect to be classified as having an I.Q. of below 53?

☐

Probability and Statistics (Cont'd)

2. True or False:

$$t_{\alpha/2;U} \leq t_{\alpha;U} \text{ for all } U \geq 1.$$

☐

3. In a certain U.S. town, tornadoes are known to occur on the average of 3 times per century. Using a suitable probability model, compute the probability that there will be at least one tornado in the next 50 years, given that there have been no tornadoes there in the last 50 years.

☐

4. A random sample of 64 independent observations is taken from a large population with mean 110 and standard deviation 16. Find the approximate probability that the sample mean is greater than 115.

☐

5. True or False:

Nonparametric methods are those which are appropriate only for paired data.

☐

6. A children's game is played the following way. Three discs (think of them as coins) are tossed. If there is a head and two tails, the player moves his marker one space on the board. If there are two heads and a tail, he moves two; if all three are the same (either heads or tails) he moves three. What is the approximate probability that the number of turns the player will take to reach the 80th space exceeds 40?

☐

7. The probabilities that a family selected at random in a certain town has 1, 2, 3, 4, 5, 6, children are, respectively:

0.1, 0.25, 0.3, 0.1, 0.1, 0.1

No families in this town have more than 6 children.

- (a) What is the probability that a family from this town has no children?

☐

- (b) What is the mean number of children per family in this town?

☐

8. True or False: For testing the hypothesis that $\mu = 0$ versus the alternative that $\mu > 0$ using a random sample from a normal distribution with mean μ and known variance $\sigma^2 = 1$, a test with significance level 5% will have a greater false acceptance probability if $\mu = 4$ than if $\mu = 2$.

☐

COMMENTS:



Queen's
University
at Kingston

St. Lawrence
College
Saint-Laurent

